OUR GOLD SUPPLY.

T. CORNISH, M.E.

7/6

From the TIMES' *Leading Article, September 15th*, 1884.

"VICTORIA is one of the world's principal Goldfields. Her Gold Harvests circulate over the whole earth. A very large part of human concerns is ruled by them. On the fruitfulness or sterility of the Victorian Gold Mines it, in a great measure, depends whether a Clerk's salary in Whitehall or a Marshall's pay in Berlin shall mean so much more or less. Gold is a measure of the material interests of the globe. Whatever affects its production at one of the main head-quarters, as is Victoria, is of universal concern."

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/ourgoldsupplyits00cornuoft

EcF
C8186nx

OUR GOLD SUPPLY:

ITS EFFECTS ON

FINANCE, TRADE, COMMERCE AND INDUSTRIES,

BY

THOMAS CORNISH, M.E.

AUTHOR OF

"*Gold Mining: its Results and its Requirements.*"—1875.

Papers on "*Prospecting Expedition to the West Gold Coast of Africa.*"—1881.

Papers on "*A Trip to Colorado.*"—1882.

Papers on "*Gold Mining and its Management.*"—1883.

&c., &c.

485053
3. 2. 49

Printed and Published by
Eden Fisher & Co., 50, Lombard Street, & 97, Fenchurch Street,
London, E.C.

1884.

"Prima fere vota et cunctis notissima templis
divitiæ, crescant ut opes, ut maxima toto
nostra sit arca foro."

Juv: *Sat.* x.

PREFACE.

The question of "Our Gold Supply" is one that does not, I think, require any apology for its introduction. To all sections of the civilized world it is a matter of paramount importance. As the supply of gold can only be maintained or increased but from one source, that is, gold mining; the remarks I have made, being the result of careful consideration of the subject and a long practical experience of gold mining on some of the chief gold fields of the world, will, I trust, be the means of creating a little more interest in the development of an industry which so materially affects Finance, Trade, Commerce and Industries.

The marvellous advancement of the world's progress in one generation will for ever mark a most important epoch of history—for never again is it likely that any great discoveries of gold will create the wide-spread thrill of excitement and that spirit of adventure which were created by the gold discoveries in California and Australia.

The magic words "Gold!" "Gold!" were heard on every side, and "Off for the Gold Diggings" became at once the hope and determination of many thousands of the most enterprizing young men of the day, who soon congregated on the world-famed Eldorados. The word "Eureka" was echoed from hills and valleys where the rich deposits of the precious metal had been found.

The discoveries of gold gave a vast stimulus to Finance, Trade, Commerce and Industries in England. Vessels were freighted from every port with merchandise and passengers to the land of gold—the gold fever permeated all ranks and classes of society, and as vessels returned from the shores of California and Australia, freighted with large quantities of gold and wealth-laden adventurers, the rage for emigration was kept up, and a stream of living humanity was poured in upon the golden shores of countries destined to be populated by millions, where had previously reigned almost silent solitude.

The wonderful changes that I have witnessed in the features of countries, converted, as by a magician's wand, from dreary, open dry plains, the solitude of sweet-scented fertile valleys, or the stillness of densely-timbered forests, into thriving cities, towns and settlements through the all-powerful influence of gold, have induced me to give some attention to the subject, and in, what I am aware is but an imperfect way, to endeavour to draw public interest to the question of "Our Gold Supply" and its effects on Finance, Trade, Commerce and Industries.

Our Gold Supply of the future will depend more on the result of calm business principles, allied with intelligent investigation of the merits of the mining industry, than upon the wild rushes of excited gold miners, or the frenzied excitement of speculative manias in share dealing.

The developing of the now well-proved auriferous resources of the various gold fields will become one of the most stable, profitable and important industries of the world, and as they become developed, will open the fields of enterprize for other industries.

To that small section of the world who know not the use or value of gold, the question of our Gold Supply will not be interesting; but to that larger portion of the civilized race who understand and know the value of gold, and who are, furthermore, anxious to become possessors of this much-coveted treasure and soother of the troubles of life, the subject will, I trust, be of interest: and if my little work be read by those interested in "Our Gold Supply," it will, I hope, be the means of giving such practical information and advice as will benefit not a few.

The views and information here given are the result of a long experience gained in Australia as one of the many pioneers of gold mining on the Ballarat and other gold fields of Victoria, and also from visits to the Gold Coast of Africa and Colorado, and a portion of that great mineral belt of the Rocky Mountains of America, the vast resources of which, as also the resources of Australia, are of so wondrous a nature that words fail to convey a description of what will be the result of their future development.

I am indebted to Mr. E. J. Farmer (author of "Statistics in Relation to Gold and Silver") for some interesting facts as to the yields of precious metals and other information, as given in his work, the "Resources of the Rocky Mountains," as also to the Government Returns of some of the Australian Colonies and other authorities, but space forbids my entering so fully into details upon that matter as I could wish.

"Our Gold Supply: its Effects on Finance, Trade, Commerce and Industries" may, I hope, awaken a spirit of inquiry and interest in the auriferous resources of the world as to where, when and how the supply of gold can be most profitably obtained.

THOMAS CORNISH.

LONDON, *September*, 1884.

OUR GOLD SUPPLY.

GOLD is the metal of all other products of the earth most eagerly sought after—beautiful in appearance, soft and ductile in its nature, it possesses charms and attractions to the ignorant savage, as also to all classes of civilised society, including the most wealthy and highly cultured. No mind is either too high or too low to despise gold, either for its usefulness and beauty as ornaments, or for its intrinsic value as a purchasing power. It has in the past, and will in the future, be the precursor of much good and evil.

The production of gold being of such immediate and direct importance to finance, trade, commerce and industries, it is desirable that the question of its supply should be carefully considered. The time is, I think, opportune for the discussion of the subject, and I will endeavour to give an outline of what I consider have been some of the chief results of gold mining on the world generally, and the Australian Colonies and America particularly, the countries that have been its special producers, as also the necessity of encouraging the legitimate development of the mining industry for increasing the supply of gold, and some of the requirements necessary for placing mining on a sounder basis, so as to produce more satisfactory results than are likely to be arrived at from the system under which it has mostly been carried on.

Gold mining may be termed a new or novel industry,—that is, so far as relates to its being made a special feature of attraction and employment to a large number of enterprising men, who, since the discovery of gold in California (1848), have pushed forth into various parts of the world, and by their labour, aided only by the most primitive appliances, have created a wealth previously unknown, of such vast proportions, that its production has been the means of revolutionising the wealth, trade and commerce of the civilised portions of the globe.

Gold is real wealth, and the standard by which all other wealth is measured. Its production is the creating of a new purchasing power, not only so far as its intrinsic value is concerned, but it is a wealth that when produced, is the germ, or means of producing additional wealth. It is different in its results from that of other productions or forms of wealth; as it is not consumed, worn out, or destroyed, its influence and its motion may be termed perpetual.

The unexampled progress, and the increased prosperity of the world during the past thirty years must, I think, be chiefly attributed to the enormous supply of gold during that period. The sudden influx of this great new purchasing power, which has been twice the quantity of bullion the world previously possessed, gave to finance, trade, commerce and industries such an impetus that could not have been derived from any other source or form of wealth.

Gold is the life blood of all finance, trade, commerce, manufactures, arts, science, learning, and every other kind of wealth for the comfort and essential necessaries of mankind. Its possession is the chief aim and consideration of all countries and civilised people. It is the standard stock or working capital of the world, from which all other sources of wealth are derived and radiate. It is magical, as well as real, in its influence. The producer and possessor of any given quantity of gold can utilise it more readily, and to better advantage, than can the possessor of any other kind of property of a relatively computed value to a similar amount.

To further illustrate my argument, the holder of a large quantity of goods of any description—say wool, iron or corn—if the market be overstocked, has to lower the price of the article, and the holder of gold can consequently buy more favourably, and make his gold go farther. Although there often is, and always will be, over production of different classes of goods, there is no probability of there being an over production of gold. The more gold produced, the greater are the wants of those who produce it; thus causing an immediate and direct circulation of that wealth amongst the community in which it is produced or ultimately absorbed.

Gold and silver being the precious metals adopted as specie, or as a medium of exchange and currency for regulating the value of other commodities for the use and benefits of mankind—they being, in fact, the axis on which revolves the finance, trade, commerce and general business, as well as the pleasures and necessities of every day life—it is of the utmost importance to all that their production, as also the results and requirements of gold mining, should be made subjects for consideration and discussion, more than has hitherto been done.

Before the gold mining era, the increase of gold for coinage was not in proportion to the requirements of finance, trade and commerce, which had been so rapidly extending; therefore, the gold discoveries seem to have been a most fortunate, if not providential, circumstance to relieve the general depression then existing, by opening up new countries for settlement, and avenues for the profitable employment of labour, the development and increase of new capital for the benefit of a large portion of the civilised race.

It is, I am aware, a generally accepted belief by many, that the production of gold is of no more value or importance to the State or the general good of the community than the production of any other article of commercial value—such as food, drink, clothing, &c. I hold a different opinion, and believe that the production of any given quantity of gold is of more direct, immediate and permanent benefit, than that of any other specific article of supposed equal value.

The production of every ounce of gold from the earth is the means of putting four additional sovereigns into circulation, which are at once available for their possessors to utilise,—although the cost of the production of gold is oftentimes an absolute loss to the producer; that is, by fixing a given sum as the value of the labour spent in raising it. The gold so raised is a gain and an advantage to the community, as it becomes an additional capital to the world's wealth, by affording greater facilities of extending its credit and securing its liabilities.

The effects of gold mining, or the production of new gold, appears to be but little understood. It has, I consider, become one of the most important industries of the world. It creates new wealth or purchasing power, and is the direct acting means of opening up new avenues of industry and trade, which but for it would not be known or required. It has the same effect on the finance, trade and commerce of the world as steam has on locomotion. Trade and commerce being merely an exchange of commodities between the several sections of a community, as also between different countries, do not create new wealth, but merely concentrate existing wealth; by this I mean that finance, trade and commerce, do not add to the stock of bullion capital; the wealth made by it is the enhancement of the value of properties and merchandise, and the extension of credit and paper currency on the business done. All the trade of London for a year will not add an ounce of new gold to the bullion currency, or actual working capital of the world.

Any party of miners producing any given quantity of new gold from the earth does more real good to the community than do the business transactions of any similar body of men engaged in other occupations, because the gold so raised by the miners becomes an addition to the working capital of the community by affording additional means of extending its credit, and securing its liabilities.

Thus any given quantity of gold raised is not only so much more money in immediate circulation, but it is also the basis from which radiates additional capital in the shape of credit or paper currency that is issued and recognised as money on the basis of gold. The continuous production of gold has become a necessity to the requirements of monetary institutions, by whose aid trade and commerce have extended to such a wonderful extent. Although the production of gold during the past 30 years has been of such vast proportions, its influence has been extended by means of credit and confidence in its security by almost arithmetical progression.

No figures or calculation can estimate the real advantages that have been gained by its dissemination throughout the channels of finance, trade and commerce.

Its results have been to raise the value of commodities, labour, material, land, houses and other properties. It has given an impetus to all trades, manufactures, arts, sciences, and learning. It has elevated the general tone of society, and information of all classes. It has stimulated social pleasures and pastimes, and engendered a spirit of enterprise in commerce, finance, and industrial pursuits never before known. The elastic credit basis on the enormous supply of new gold produced by the miners has been stretched to a great extent, and the calculations and speculative operations of almost all our monetary institutions are based upon a continuance of the supply,—so that if it were to happen that the gold miners ceased their operations, and suddenly stopped the supply of new gold, the trade and commerce of the world would receive such a shock that they would for the time be paralised. Monetary institutions would feel a like effect, and many of them would be ruined. It would lead to almost general bankruptcy, and an immense curtailment of national and private expenditure. Any sudden or partial check in the production of gold, must, as a natural consequence, have a corresponding effect on the general trade and prosperity of the countries in which it is produced, or in which it is mostly absorbed.

The uses to which gold is applied for practical manufacturing and ornamental purposes are so numerous and well known, that it is unnecessary to attempt to describe them, suffice it to say that a very large proportion of the gold raised is manufactured into articles of use and ornament, which, if necessary, in time of monetary difficulties, can be converted into the standard gold coin of the country in which it is in use or required.

Gold, unlike most other mineral productions, does not corrode, waste, become injured, or materially depreciate in value like other articles of vertu; it may be worn as ornaments, or used as plate, or other purposes, and, when required, can be sold for full value as gold or converted into coin for financial purposes. Although any given quantity of gold may be manufactured into articles of use or ornament, and its intrinsic value become enhanced by the labour and skill spent on its ornamentation, the enhanced value may become lost by the result of accident, but its intrinsic value as gold for coinage remains unaltered. To illustrate my argument as to the special value of gold, and the means by which its possessor can utilise it more readily than other articles of supposed equal value, as I have before stated, I will instance a case in point. Supposing a pound weight of gold value (say) nearly £50, or which will coin into (say) fifty sovereigns, be made into some ornament, and its value by the labour and skill spent on it be raised to £100; then take any other article of use or ornament of a destructible nature, such as a vase, piece of furniture, or picture, of a similar value of £100; and in an accident by fire or a smash the two articles of supposed equal value become burnt or broken, the loss of the vase, piece of furniture, or picture would be £100; while the loss of the gold ornament would be only £50, as neither fire or damage by smashing will decrease the weight or intrinsic value of the gold, that is still worth £50, or will coin into as many sovereigns; or, as a further example, say a miner produces a pound weight of new gold from the earth, and immediately invests that amount in some article of luxury, if afterwards he requires to realise on the investment, he would in all probability have to submit to a considerable loss on the sale of the article; but the possessor of the gold can re-invest the ready cash more advantageously in extending his business operations than he could by purchasing goods on credit; thus the gold passes from one to the other, from the miners to the retail and wholesale traders, merchants and manufacturers, thence probably to banking institutions, from which concentrated point its influence radiates, and credit or paper money is issued for the convenience of customers of such monetary institutions.

As the production of gold has such an immediate influence on the prosperity of the countries in which it is produced, as also a more remote, but equally direct, influence on the welfare of the countries in which it becomes absorbed, it is a matter of the highest importance that the subject should receive the most careful consideration, and any practical suggestions that may be offered that will afford the means of permanently increasing the supply should receive the attention of all interested in its results. England has become the great concentrator of the gold raised by the miners of Australia. As the chief emporium of trade, commerce and manufactures, she has received and disbursed, as also substantially benefited by the production of the vast new wealth which has been poured into her lap chiefly by the enterprise of a few of her sturdy sons, whose undaunted energy has in the last thirty years opened up mineral, agricultural, and pastoral resources of almost unlimited dimensions.

The most practical evidence of the effect of the production of gold, and the pecuniary benefits conferred upon civilised nations by its dissemination throughout the various channels of trade and commerce, is shown by the enormous financial transactions that have taken place during the last few years. France paid a war indemnity of £200,000,000 to Germany after the late war; America in a few years has nearly paid off the huge debt contracted during the civil war; while Turkey has also been mulct in a very heavy indemnity. Previous to the gold discoveries it would have been impossible for any nation to have paid in bullion £200,000,000 as a war indemnity. Some few years ago, in the Australian Colonies, while discussing the subject of our gold supply in the press, the question was asked as to what had become of all the gold raised, as the Colony of Victoria had so little to show for the £200,000,000 that had been produced within its territory? I gave a reply through the *Ballarat Courier* as to what had become of a very large proportion of it. From a statement in the *Money Market Review*, it was shown that English financiers had advanced by loans to the several bankrupt States of Europe and South America upwards of £600,000,000 in 25 years, and at that time the market quotations of the stock gave it a value of a little over £60,000,000; so that in a quarter of a century there has been a depreciation or nominal loss of over £500,000,000. These loans had been made to Turkey, Spain, Greece, Egypt, Mexico, Granada, Venezuela, Iquique, Honduras, Peru, Chili, Paraguay, Uruguay and other places. Lord Derby, in a public speech about that time, stated that the loss of British capital advanced to defaulting States had been over £300,000,000. Although a considerable amount of the money lent to these countries might have been re-invested in English goods, there can be little doubt that by far the greatest portion of the bullion sent to these countries has become absorbed amongst the population, and the governments in most cases are unable and unwilling to pay the interest or principal; and the money may be considered as lost.

The enormous quantity of bullion produced by the gold miners since the discoveries in 1849 and 1851, amounting to about £1,000,000,000 sterling, has for the most part gravitated to England, thereby enabling financiers to carry on a most reckless system of money lending to States and nations; the most of them, if not absolutely bankrupt, are unable to meet their engagements. Nearly one half the new working capital of gold furnished to and distributed throughout the world by the gold mining population has been unfortunately sunk in the bankrupt States of Europe and South America; this and the falling off in the yield of the gold, have been no doubt among the primary causes of the great depression lately existing in England, and the collapse of several monetary institutions a few years since; as also of the outcry of the scarcity of gold; it may also be a solution of what became of a large portion of the gold raised during the gold era, the balance being distributed throughout the world as coin and manufactured articles of value.

Had the financiers and capitalists of England devoted only a moderate proportion of that vast sum so irretrievably lost to the bankrupt States to the practical development of the gold mining resources of the Australian Colonies, New Zealand and America, they would not only have materially aided the legitimate development of mining, increased the supply of gold or new purchasing power, and fostered other industries and forms of wealth incidental thereto, but would have been handsomely compensated for the outlay.

The value of our gold supply has occasionally received attention at the hands of some writers on finance and political economy, but it is somewhat surprising that a subject of such vast importance to the general progress of the world has not been more fully dealt with.

There can be little doubt that the unparalleled production of new wealth by the gold and silver mines has been the primary cause of the marvellous and rapid progress of events, the enormous increased wealth and prosperity of many civilised nations; and, in consequence of this general advancement of wealth, intelligence, trade, commerce and finance, it has become an absolute necessity that the annual production of gold should not only maintain its present standard, but that the supply of new gold should increase annually in the same ratio as trade, commerce and population.

As newly established banking institutions require to be holders of gold proportionate to the notes or credit paper issued, it stands to reason that, unless the supply of new gold be maintained, trade, commerce and financial operations must be curtailed, which means general depression and a proportionate decrease in the value of all kind of properties and labour. Civilised society, having during the past thirty years been indulged in a sudden increase of wealth and prosperity, by the production of gold, and tasted the pleasures and luxuries of life derived from this unparalleled increase of new purchasing power, would not be content to limit, forego, or give up the acquired taste for new and pleasant luxuries, which it would have to do if the production of gold materially decreased.

Gold mining must, therefore, be considered one of the most important industries of the world, and one to which there should be more intelligent consideration given than has hitherto been done.

Mr. Stephen Williamson, writing in the *Contemporary Review*, April, 1879, says:—"It will not be questioned that the large increase of the world's money, due to the Australian and California gold discoveries, led to a great extension of the world's commerce. The interchange of commodities was marvellously stimulated, labour had for many years a greatly augmented recompense, the material comfort and welfare of mankind were greatly promoted, real and personal property increased enormously in value all over the civilised world, the foreign commerce of England alone rose from £250,000,000 in 1852 to £650,000,000 in 1875, the foreign commerce of many other nations rose in like proportion."

It is somewhat surprising that our gold supply has not attracted more attention and earnest consideration from financiers, statesmen, writers on political economy, and others so deeply interested in its production, as the tone of the money market is in a great measure regulated by the supply of gold.

In discussing the question of our gold supply in Australia, I have been met with some peculiar, and, I might say, most absurd arguments—such as, "Oh! gold is only so much trash. You can't eat it. You can't drink it. It is only useful as a medium of exchange. Any other metal would do as well for exchange purposes: "If," (that little word) "If, it were only made a legal tender." One anonymous writer, questioning what he termed my peculiar views on the value of gold, asked "which I would prefer, being in a desert with a loaf of bread and a glass of water, or a bag of gold." I replied, under such circumstances, I should prefer the bread and water; but I asked my would-be critic, "which he would prefer in a centre of civilisation, 100 sovereigns or a loaf of bread and a glass of water," he replied: Unquestionably he would prefer the 100 sovereigns, because it would represent many loaves of bread and other necessities.

On the publication of my pamphlet in Victoria, 1875, "Gold Mining; its Results and its Requirements," some of the reviewers in the press, while giving me every credit for practical knowledge and experience of the requirements of mining, mostly took exception to my views on the value of "gold as real wealth, and, in what they termed, my speculations on matters of political economy." Some of them "doubted whether I had paid sufficient attention to one of the problems which have been mastered by political economists." With all due respect to the reviewers of my work and their opinions of my views on the special value of gold as real wealth, the mere echoing of opinions of some writers on political economy did not in any way convince me that I was in error, or that the attention I had given to "Gold Mining; its Results and its Requirements" had led me into the statement of views I did not thoroughly believe in. In reply, I think I may fairly ask whether they, and others who are apt to make such crude statements about the value of gold, have paid sufficient attention to the results of its production.

I wish particularly to draw the attention of those who may dissent from, or be inclined to criticise my views on the value of gold, to the fact that I am well aware of, that we cannot eat or drink gold, (although many eat with golden teeth,) and that there are many times and circumstances in which gold of itself would be valueless,—such as in a desert, in an uninhabited island, or uncivilised country, in time of shipwreck, or other disaster. Nor do I desire to speculate on abstract theories of what may be the value of gold, supposing some other metal or substance was made a legal tender, and to answer the purpose of coin throughout the civilised portion of the world. I am quite content to base my "theories on the value of gold" upon the positive fact, that it is, and has been for ages, and is likely to continue, the metal chiefly recognised and adopted as specie, or as a medium of exchange and currency for regulating the value of other commodities. That it is a form of wealth that all sections of civilised humanity, from the cradle to the grave, are desirous of acquiring, that all nations, creeds and countries are striving with each other to become its possessors, as much as possible. That the nation or country that has most gold is enabled to make the most rapid progress, and that it has a talismanic effect on the development of other industries.

Having carefully watched the results of the production of gold, not only upon the people of the community who produced it, but also upon those who became participators in its advantages when produced, I confidently believe that its production is one of the most important questions of the present day, and that it more directly affects the general prosperity of nations and individuals, than does the production of any other article of supposed equal value.

There is a great difference between the producers of new gold, and the concentrators of existing wealth. A few miners producing, say £100,000 in virgin gold from the earth, do more good to the community in which they reside than persons who make a fortune of that amount in trade or business; by the production of new gold, no one is injured, and many become benefited, as it is an immediate addition to the bullion capital, and on its basis, additional wealth becomes created by the extension of credit, and the issue of paper money, based on the security of gold. But the concentration of a similar amount in the hands of a few traders, benefits the individuals only, while injuring or depriving those from whom it has been gathered. It is not an addition to the world's capital, but only a concentration from the many to the few.

In advocating the special value of gold as a superior form of wealth, and the importance of developing gold mining to maintain the supply requisite for the uses of finance, trade and commerce, it is not to be supposed that I in any way depreciate other forms of wealth, or undervalue the various industries of the world, which all tend to promote prosperity and supply the wants of mankind. It is, and has, been possible, by people being possessed of sufficient to supply their wants, in the shape of food, drink and clothing, to be considered wealthy, without being possessed of either gold or silver; but that wealth consists chiefly in a contented mind, a clothed body, and a filled stomach. The wants and desires of intelligent humanity are not in these days confined within such narrow limits. Custom, the usages of society, and the general desire for knowledge, with the requirements of finance, trade and commerce, render it necessary that a supply of gold should be continuously produced in quantities proportionate to the increase of population, and their necessities. To insure that supply, it is necessary to consider the source from whence it is derived, for while other articles of value may be produced in profusion and yet add but little to the world's wealth,—gold, the solid basis or foundation of other wealth, the article of special value, which all mankind are seeking for, can be procured, or its supply increased, only from one source, and that is, by *gold mining*. All the clever systems of finance, the issue of paper money, the trading and manufacturing resources of the country, will not add new bullion to the currency of the realm—that can only be obtained by the miners, who seek the precious metals in the earth.

Gold mining, or the production of gold and silver, is not only the means of creating a previously unkown wealth, or permanent purchasing power that did not before exist, but the nature of its operations is such, that it affords more means of employment, and uses up more material and appliances than any other labour, thereby opening up new channels of industry, that would not otherwise be called into existence, and disseminates its influence over a wider range, and amongst a greater number of people than can possibly be done by the production of any other articles of use, trade and commerce. The very nature of the occupation of gold mining, especially in the early days of the gold fields, seems to have imbued the miner with a spirit of recklessness and extravagance, so that no matter how readily the gold was acquired, it was spent as freely in the most heedless and unbusiness-like manner; in fact, the gold was in many instances literally thrown away, and poured into the pockets of other people without the trouble of their seeking it.

To give instances of the reckless extravagance of gold miners in early days of mining, would be merely to reiterate tales often told of the follies it was possible for men to perpetrate. The gold so recklessly squandered by them was spent chiefly in the purchase of high priced goods and liquors from England, the imports for some time being from £50 to £70 per head, per annum, of population in Victoria, including women and children.

The benefit the Colony of Victoria has been to England during the past thirty years may be imagined from the fact of her having sent here not less than £200,000,000 in gold, raised within her own territory, while New South Wales has sent nearly £40,000,000; New Zealand about £40,000,000; Queensland about £15,000,000, while South

Australia and Tasmania have contributed a small quota, making a total of about £300,000,000, which has been distributed and absorbed here in the extension of finance, trade, commerce and manufactories, besides other produce of wool, &c., thereby causing an enormous increase of general business, and adding materially to the wealth of the nation.

The total production of the precious metals, as given by the returns of the United States of America, and quoted by Mr. E. J. Farmer, author of "Statistics in relation to Gold and Silver," in his late excellent work, the "Resources of the Rocky Mountains" is gold 1,588,571,656 dollars, silver 544,327,548 dollars, equal to about £428,579,840 sterling. To this must be added the yields of gold and silver from British Columbia, South America, Africa, and other places, which, with considerable quantities not accounted for by statistics, will bring the gross product of the precious metals since the golden era of California and Australia to fully one thousand millions sterling.

The effect of so vast an addition to the purchasing power of England from the gold fields of Australia and America has been apparent in the great financial undertakings that have been entered into, the increased wealth, business, and value of property. When speakers and writers express opinions that the colonies are of none, or very little advantage to England, they can surely have given but little attention to the value of the production of gold from the Australian colonies, and its effects upon finance, trade and commerce, and the various industries of great Britain.

If, as it will, I think be conceded, an increased production of gold, must, as a natural consequence, be of great advantage to the country in which it is produced, and to those who invest their capital in its production, it will not be out of place here to consider the best means by which an increased supply of gold can be insured.

Gold mining, is, I consider, one of the most honourable, legitimate, and honest occupations that a man can follow. The golden treasures of "Nature's National Bank of Issue" are obtainable by all who open an account with her. By industrious, economical, and scientific explorations, the riches of the earth can be obtained without respect of persons. Some of course will be always more successful than others in accumulating its treasures; but to all who follow gold mining as an occupation on their own account, there is a hope and possibility of becoming a prosperous and lucky miner. It encourages and fosters an independence of character that belongs to no other kind of labour. The results of prosperous mining are different from the results ot prosperity obtained by other labour or business. Thus, the miner who wins gold from the earth produces a wealth previously unkown, that immediately it is produced, is a benefit to the producer and all around him. It is the metal for currency, to effect rapid exchanges, and the gratification of tastes and habits, which act on trade and commerce like the life blood on the human system.

The more gold obtained, the greater are the wants of those who obtain it. If the miners only obtain, on the average, a few pennyweights each weekly, their expenditure is confined to that; but if the same amount of labour that produces only pennyweights should by a change of luck produce ounces, then all members of the community participate with the miner in his improved and increasing means of wealth. Thus it is of far greater importance to the general public to hear of the discovery of a new gold field, or the improved prospects of an established one, or of any new process of extracting more gold from the matrix operated upon, than it is to hear of the rise in price of wool, grain or meats, because the increased yield of gold benefits the general public, while the rises in the prices of wool, grain or meats is a loss to the general public, who have to purchase them, and a gain only to the producers.

I have often, during my residence in Australia of 25 years, and associated with gold mining, endeavoured to impress on the miners and business men in the Colonies, the necessity of establishing mining on a more sound and satisfactory basis than the scrambling, hurry-scurry manner in which it has hitherto been conducted. For many years after the discoveries of gold there was a very prevalent idea existing, not only amongst business men and others unconnected with mining, but also amongst many of the miners themselves, that gold mining would not long remain a permanent or profitable industry, and it was in consequence of this impression taking such a firm hold of public opinion that caused gold mining and the miners themselves to be treated with such disfavour. In Australia the laws were at first so framed as to throw obstacles in the way of the development of mines, and it was a long and wearisome effort to bring about a reform that has had the effect of developing mines more extensively, and establishing mining on a more permanent basis.

Gold mining may be classed under two distinct headings,—*Alluvial* Mining, and *Quartz* Mining. Alluvial Mining consists in the extraction and treatment of alluvial deposits on the surface, or in shallow or deep leads, which are the deposits arising from the disintegration of quartz lodes, operated on by atmospheric action and flood waters in early stages of the world's formation. Surfacing is that in which first deposits of gold were mostly found, laying chiefly on the tops of quartz ranges, on the sidings or points of ranges and heads of gullies or flats, and the gold may be found distributed in the gravel, mould, clay, or schist formation from a few inches to several feet in depth, to be separated therefrom by the ordinary methods of box or ground sluicing, or washing by tubs, cradles, or puddling machines or crushing batteries or hydraulics. In surface or shallow mining, unless the gold is distributed throughout the soil or gravel, it is not usual to strip off more than from 6 to 12 feet. Over that depth shafts are usually sunk to raise the auriferous gravels for washing; leads or gutters are the ancient water courses, the beds of which contain the auriferous gravels more or less rich in gold, that have become overlaid with deposits of clay, drifts, gravel, or basaltic rocks, according to the more recent formations in the districts where such auriferous deposits are found; the trend or course of alluvial leads or gutters for the most part follow the course of main creeks, or rivers on the surface. The width of the leads, the thickness and quality of wash-dirt, vary considerably, and the sinuosities of the leads or gutters are so great that it was often difficult to trace their course. But now, by the use of boring rods and diamond drills, the trend of the deep ground is rapidly proved, and prevents much loss of time and capital in sinking unnecessary shafts and constructing long drives to find the leads.

The working of alluvial leads or gutters varies according to the depths and difficulties of sinking the shafts; any shallow sinking may vary from 10 to 100 feet in depth, the size of claims also varying according to the regulation of mining districts, the number of men working such claim may be any number from two to twenty. The mode of extracting the gold is by the old fashioned process of tub and cradle, or puddling machines. In some districts the surfacing or terraces of auriferous drifts and gravels are washed by sluicing, but deep sinking varies from upwards of 100 feet, some of the alluvial leads in the Ballarat district being over 500 feet deep, the area for claims varying according to the mining regulations of the colonies. In Victoria the area is, practically speaking, almost unlimited, the greater the depths of sinking with difficulties of rock, drifts and water to contend with, it is essential that a large area of surface ground should be held as a claim to insure a proportionate share of auriferous wash in the gutters; thus deep alluvial claims may vary from 50 to 500 acres, and in some cases more,—the number of men employed in working a deep wet mine also varies according to circumstances, of the depths of shafts, the area of claims, the amount of ground opened for blocking out, and the extent and appliances for washing, and there may be from 50 to 500 men at work in a mine.

Quartz mining is in lodes or veins of quartz, and are known as vertical, flat, or underlaying lodes, which for the most part have a northerly and southerly course, with occasional cross courses, east and west. A main line of quartz reef or lode, is a body of stone, encased generally between two well defined walls of schist, with foot and hanging walls, and may vary in thickness from a few inches to several feet in thickness, and yield from a few grains to pennyweights, or ounces per ton. Some main lodes, or true fissure veins are traceable for great lengths, and have been proved to great depths. A cross course, or dyke, occasionaly cuts across the course of a lode, causing a heave, or throwing the lode out of its ordinary course, which makes it difficult sometimes to find it again. In some parts of Victoria, notably in the Sandhurst district, there exists saddle reefs, some of which have proved remarkably rich, and are being profitably worked to great depths.

Gold mining, while being of a very speculative character, often delusive and disappointing in its results to many, has been highly profitable to, and laid the foundation of, great success to large numbers of men who made it a stepping stone to fortune. The production of gold might have been materially increased, and made much more profitable to the producers, had it not been for the great waste of labour and capital through ignorance in management, and want of a better system in directing mining works, as also the want of more efficient appliances and machinery for working mines more effectively. In consequence of this great waste, I estimate that fully fifty per cent. of all capital and labour invested in mining in Australia (up till within the last few years) has been wasted or misapplied for want of more efficient appliances, and better direction of capital and labour or inadequate mining laws. There are many practical and intelligent miners, who from force of circumstances have been, and are now unable to utilize their local knowledge to the best advantage in consequence of inefficient appliances and means for working mines and from the want of proper supervision, organisation and direction of their labor.

The introductory remarks of Mr. E. J. Farmer, in his work "The Resources of the Rocky Mountains," are worthy of being here quoted:

"It was on the 19th day of January, 1848, that James W. Marshall, at Coloma, made the first discovery of gold in California. Numerous discoveries then followed in quick succession, until the cry of gold! gold! gold! rang all along the shores of the Pacific; thence over the summit of the Sierras, and the still higher crests of the Rockies; it came sweeping down the long inclined plains, into the valley of the Mississipi, thence across the broad prairies to the borders of the lakes, turning men's faces everywhere towards the setting sun; still onwards through the woodlands of Ohio and Pennsylvania, over the peaks of the Alleghanies and the Blue Ridge, and descending to the shores of the Atlantic, it was wafted to the Continent of Europe.

Wherever the cry was heard, men began to "see visions and to dream dreams," and from that moment the mighty march of empire began. From every port sailed ships, freighted with daring and adventurous men, destined for the land of gold. From the topmost masts of these ships, on long steamers, floated upon the breeze the magic words

"California," and they departed, amid cheers from unnumbered thousands to sweep through tempestuous seas around Cape Horn for the golden gate.

In the mean time, trains of white tented wagons were fast gathering upon the banks of the Mississipi for their long and weary march to the new Eldorado of the world. The story of the 49'ers, whose descendants are now the nabobs of the Pacific Coast, is one full of a romance, such as can never again be repeated upon the American Continent.

In 1852 a faint cry of gold was heard from Gold Creek, in Montana, only to be increased to thunder tones by discoveries of the precious metal in Pikes Peak, in Colorado; when, as from California, the thrice echoed sound of gold! gold! gold! was again heard upon the shores of the Atlantic, and the broad expanse of the Continent once more resounded with the tramp of marching thousands. From that hour, onwards, the domain of civilisation was rapidly extended, until in 1869, on the 10th day of May, the iron arms of the Union and Pacific Railway clasp hands at the summit of the Rockies, while a thrill of electric joy passed over the broad expanse of the Continent, from ocean to ocean.

Under the magic influence of gold, what mighty changes have been produced in thirty-five years; what a stream of this metal has been flowing from California, Montana, Nevada and Colorado, into the world, enriching it in all that goes to bring man to his highest and best estate. Under this magic word, what thousands of courageous men have scaled every mountain side, and marched through every valley of the vast ranges of American

Cordilleras; they have tapped the mighty veins of the mountains, and, to-day, the cry that rings from ocean to ocean, is silver! silver! silver! It began in Nevada, and is now echoed from Colorada, Utah, Arizona, New Mexico, Wyoming, Idaho, Montana and Dakota. A stream of silver has been opened amid the Rockies that will, in time, make the American Nation the richest on the globe.

The brief sketches given in the pages of the "Resources of the Rocky Mountains," are intended only as a birds-eye view of this land of wealth. To reach it, it is no longer necessary to sail the seas round Cape Horn, or to travel by a tedious caravan across the plains; for a dozen lines of railway lead to this land of silver and gold.

The slow tedious wagons have given place to the luxurious palace cars and a trip across the plains is now one to be remembered with delight. From Chicago, in the brief space of six hours, you are at the "Father of Waters," the mighty Mississipi, while in twelve more you are upon the banks of the Missouri. Then for thirty hours you traverse the plains of the great West in a comfortable palace car, and rise by a steady incline to an altitude of 5,600 feet above the sea, when you come to the "Queen City of the Plains," Denver."

The rapid strides of material progress in wealth, population, finance, trade, commerce, and industries, in America, in consequence of the discoveries of gold, have been of such a massive and wonderful character, that the advantage arising therefrom can scarcely be estimated by any form of calculation, and it is only by witnessing the marvellous results of the power of gold, and the effect of its production and dissemination throughout that vast country and its people, that any estimate can be formed of the value of its discoveries and the necessity of a continuance of the supply of gold and silver.

At the opening of the Denver National Mining and Industrial Exhibition, 1882, all the States and territories of the Rocky Mountains made a display of their resources, when the Honourable William D. Kelley, in his opening address, made the following remarks:—

"The splendors of Palmyra of the desert, pale before a recital of a brief history of Colorada. Ten years ago I spent some weeks in traversing your beautiful State, and became familiar with everything of note in Denver, its metropolis; and as yesterday morning I looked upon the city again, I felt that I could not safely trust my own senses; I wondered whether I was not under the dominion of Magi, and if fairies and genii were playing tricks with my vision. History may be challenged, and be challenged in vain, for a parrallel to the progress made by this city in this brief period, in wealth, in arts, in all the elements of modern and advancing civilisation. Standing here, on the western borders of what was called a few years ago the distant plain, and in the shadow of the Rocky Mountains, with an elevation of more than 5,000 feet above the sea; we mark in the opening of this exhibition, the entrance upon a new era in history, more brilliant than any of its predecessors; more beneficent, inasmuch as it will open the blessings of civilisation to portions of the people who have hitherto failed to receive them. In the new era the beneficence of Providence will be illustrated more largely than ever before, and man will assert his dominion over nature as he has ever done.

The telegraph, the telephone, the various applications of electricity, is each in itself a marvel. They were concealed from human vision till within the life of a living generation. Wondrous as they are, marvellous as have been their influence upon our social and industrial life, they are not the final discoveries or achievements of man; other scenes will come to us, and the uses of science will greatly extend our domain by processes as yet undreamed of. And they will be applied to the development of the wealth and social life, in this region, and throughout the mountains. These mountains are magazines of mineral wealth inexhaustible; and they are not to be handled in the future by the wasteful processes of the past."

Mr. Kelley in another address delivered at Philadelphia, April 12th, 1883, says "In 1849, the gold fields of California were discovered. During each year of the decade 1850 to 1860, they yielded more than $100,000,000, say £20,000,000. Had we been a manufacturing nation, this enormous addition to the money metals would have remained with us, and by vivifying and expanding all our industries would have given steady work, increasing wages, and unexampled prosperity to the whole people. We were, however, not manufacturers, but were little more than producers of raw material for export, and the gold, which should have enriched us, went abroad to purchase consumable commodities, which we could have produced, and the materials of which lay in profusion around us. Thus swelling our exports, it agumented our foreign commerce, but did it at the cost of other interests. Though we had since 1849 mined $1,100,000,000 (or say £220,000,000) of gold, 1860 found us steeped in bankruptcy, and dependent for a medium of exchange upon the irredeemable notes of insolvent banks. Cheap foreign imports had closed our furnaces, forges and factories, and thus destroyed the farmer's home market for his productions, labour was without employment, enterprise without capital, and the government without revenue or credit."

There can be little doubt, that the greater portion of the gold in California up to 1860 gravitated to England through the channels of trade and commerce, to the immense advantage of the British artizans, manufacturers, shippers, financiers and others benefited by its dissemination amongst them as payment in hard cash for manufactured goods and material.

It is shown from Mr. Kelley's remarks, that after the establishing of a protective policy, the outflow of gold from America to England for the payments of British manufacturers soon materially decreased, and a corresponding, and a remarkably increased prosperity in all branches of industry followed. He states that, "between 1850 and 1860, notwithstanding our unparalleled production of gold, and the consequent increase of immigration, our development of manufacturing power was scarcely appreciable. When, in 1861, congress advanced the rates of duty on manufactured articles, we had not in any year produced 1,000,000 tons of pig-iron. Since then our increase has been steady, and last year our production was nearly five million tons. In 1860, the manufacture of steel in commercial competition with

England, was an experiment of doubtful issue. Now we produce one-third of the steel in the world, and export much of our product in the highest forms of varied manufacture, including saws and surgical instruments.

The great test of a nation's civilisation is said to be the average consumption *per capita* by its people of iron. Let us apply this test to the civilisation of the American people under free trade and protection. Between 1850 and 1860, the production of pig-iron, forged and rolled iron and steel was practically stationary, and in 1860 employed but 39,000 hands. After twenty years' protective duties, they gave living wages to more than 140,000 hands. The capital invested in these branches in 1860 was less than $50,000,000, but twenty years of protective duties had served to expand it to $230,000,000. The wages paid in this industry in 1860 were but $12,000,000, as against $55,000,000 in 1880. The materials they consumed in 1860 were valued at $34,000,000, and in 1880 at more than $190,000,000. And the annual production rose from $60,000,000 to more than $296,000,000.

The chemical industry, as found by the census, did not exist in 1860; its progress may therefore be accepted as an indication of general growth and prosperity. Making no figure in any previous census, in 1880 it was employing $85,000,000 of capital, paying $12,000,000 of wages, and consuming nearly $80,000,000 of material."

All other industries in America, whether arising from agriculture or manufactures have progressed in a remarkably rapid and substantial manner, which may be attributed to the output of the enormous supply of gold and silver from the mines, which has created such a vast cash capital for the more easy and ready development of other resources of the country, which, but for it, would not have been known or required.

The extension of railways in America has also been marvellous. In 1860 less than 30,000 miles had been built, in 1880 there were working 95,000 miles, and now working 120,000 miles, or more miles than are owned by the whole of Europe.

The population of the United States have grown from 20,000,000 in 1845, to 50,000,000 at the present day, and their exports from £20,000,000 to £155,000,000 per annum, and the home trade is estimated at more than £1,000,000,000.

The great success of financial and commercial enterprise, as also of the industries arising from manufacturing and agriculture in America, is chiefly to be attributed to gold and silver mining. The enormous output of bullion, converted into hard money, has afforded such a solid basis of real wealth as a working capital, that credit and confidence in the security of the vast wealth already produced, as also in the well known hidden treasures of gold and silver in "Natures National Bank of Issue," the mines, have enabled financiers, traders, manufacturers and others to carry on operations in a colossal way with profit to themselves and other members of the community, amongst whom the wide spread influence of the production of gold and silver permeates.

No other form of industry or source of wealth has such a magic or quickening influence in the concentration of population, the rapid formation of settlements, and the establishment of other industries, as that of gold and silver mining. No sooner is a payable field discovered, although it may for a time be kept secret, the news soon leaks out, and no matter how inaccessible the spot, a rush of enterprising miners at once sets in, and the gullies, hills and valleys resound with the whir of busy life and industry, then follow up the pioneers, the traders, manufacturers and financiers, roads are formed, towns and cities built, and the railway engineer soon finds his way to the new mining camp; in the rich valleys and slopes of the hills soon settle the agriculturists, for as a rule there is no better market for the disposal of farm produce than mining centres of population.

The average miners will live well—no matter what the cost, and when gold is plentiful generally indulge in extravagance, as a rule living up to their income, it matters but little what quantity of gold is obtained, it is expended with a freedom that has made the extravagance of gold miners synonymous with folly and absurdity.

It has been this habit of lavish expenditure of hard, and sometimes easily earned wealth, by the gold miners as a class that has made trading, manufacturing, and agriculture in and near gold fields so highly profitable. From Mr. E. J. Farmer's work, "The Resources of the Rocky Mountains," are taken the following interesting statistics of the estimate of gold and silver produced in the United States, from 1845 to 1881 inclusive, which will give some idea of what must have been the results of such an annual production of gold and silver added to the wealth of the community in which it was produced.

From Official Reports by the Director of the Mint of the United States, and other Statistics.

Year.	Gold.	Silver.	Total.
1845	$1,008,327		$1,008,327
1846	1,239,357		1,239,357
1847	889,085	From 1849 to 1858, estimated product $50,000 per annum.	889,085
1848	10,000,000		10,000,000
1849	40,000,000		40,000,000
1850	50,000,000		50,000,000
1851	55,000,000		55,000,000
1852	60,000,000		60,000,000
1853	65,000,000		65,000,000
1854	60,000,000		60,000,000
1855	55,000,000		55,000,000
1856	55,000,000		55,000,000
1857	55,000,000		55,000,000
1858	50,000,000	500,000	50,500,000
1859	50,000,000	100,000	50,100,000
1860	46,000,000	150,000	46,150,000
1861	43,000,000	2,000,000	45,000,000
1862	39,200,000	4,500,000	43,700,000
1863	40,000,000	8,500,000	48,500,000
1864	46,100,000	11,000,000	57,100,000
1865	53,225,000	11,250,000	64,475,000
1866	53,500,000	10,000,000	63,500,000
1867	51,725,000	13,500,000	65,225,000
1868	48,000,000	12,000,000	60,000,000
1869	49,500,000	12,000,000	61,500,000
1870	50,000,000	16,000,000	66,000,000
1871	43,500,000	23,000,000	66,500,000
1872	36,000,000	28,750,000	64,750,000
1873	36,000,000	35,750,000	71,750,000
1874	33,492,902	37,324,594	70,815,496
1875	33,467,856	31,727,560	65,195,416
1876	39,929,166	38,783,016	78,712,182
1877	46,897,390	39,793,573	86,690,963
1878	51,206,360	45,281,385	96,487,745
1879	38,899,858	40,812,132	79,711,990
1880	36,000,000	38,450,000	74,450,000
1881	34,700,000	43,000,000	77,700,000
	$1,558,378,301	$504,172,260	$2,062,550,561
1882	30,193,355	50,155,283	80,348,643
1883	35,000,000	55,000,000	90,000,000
	$1,623,571,656	$609,327,543	$2,232,899,204

GOLD AND SILVER.

WORLD'S PRODUCTION AND SUPPLY.

	Gold.	Silver.
Stock in 1492	$ 500,000,000	$ 400,000,000
Production 1492 to 1848 ..	3,200,000,000	7,000,000,000
Stock in 1848......	$3,700,000,000	$7,400,000,000

YEARLY PRODUCTION SINCE 1848.

Year.	Gold.	Silver.
1849	$61,500,000	$39,000,000
1850	70,500,000	39,000,000
1851	81,500,000	40,000,000
1852	132,750,000	40,600,000
1853	155,450,000	40,600,000
1854	127,450,000	40,600,000
1855	135,070,000	40,600,000
1856	147,600,000	40,650,000
1857	133,275,000	40,650,000
1858	124,650,000	40,650,000
1859	124,850,000	40,750,000
1860	119,250,000	40,800,000
1861	113,800,000	42,700,000
1862	107,750,000	45,200,000
1863	106,950,000	49,200,000
1864	113,000,000	51,700,000
1865	120,200,000	51,950,000
1866	121,100,000	50,725,000
1867	114,025,000	54,225,000
1868	109,725,000	50,225,000
1869	106,225,000	47,500,000
1870	106,850,000	51,575,000
1871	107,000,000	61,050,000
1872	99,550,000	65,250,000
1873	96,200,000	89,250,000
1874	90,750,000	71,500,000
1875	97,500,000	80,500,000
1876	95,000,000	74,000,000
1877	97,000,000	81,000,000
1878	86,500,000	73,500,000
1879	105,400,000	81,037,500
1880	94,800,000	72,125,000
1881	110,000,000	94,000,000
TOTAL	$3,613,175,000	$1,833,112,000

SUMMARY.

	GOLD.	SILVER.
Stock in 1492	$ 500,000,000	$ 400,000,000
Production 1492 to 1848 ...	3,200,000,000	7.000,000,000
1849 to 1881	3,613,175,000	1,833,112,000
TOTAL	$7,313,175,000	$9,233,112,000
Or say	£1,262,635,000	£1,846,622.400

Estimating loss from abrasion and total destruction at one-tenth of one per cent. per annum, there would be a loss $730,000,000 gold, and $1,000,000,000 silver, leaving world's supply, on January 1st, 1882, as follows:—

	GOLD.	SILVER.
Total Production	$7,313,175,000	$9,233,112.000
Destroyed	730,000,000	1,000,000,000
	$6,583,175,000	$8,233,112,000
Stock of gold & silver, Jan. 1, 1882	£1,312,635,000	£1,646,622,400

The following table gives a comparative statement of the yield of precious metals since the earliest times in different countries, and their use:—

Production before the Christian era... ...	$5,000,000,000
,, since, and down to discovery in America	4,000,000,000
Production between years 1492 and 1852 ...	10,000,000,000
,, between years 1848 and 1882 ...	6,500,000,000
,, of gold in Russia...	1,000,000,000
Total world's production ...	$26,500,000,000
Or about ...	£5,300,000,000

Annual production before the Christian era ...	$10,000,000
,, since to discovery of America	5,000,000
,, the succeeding 350 years	25,000,000
,, from 1842 to 1852... ...	100,000,000
,, from 1852 to 1882... ...	200,000,000

Estimated Amount of Gold and Silver in the World.

Estimated amount now in existence... ...	$15,000,000,000
,, lost, destroyed and used in arts	11,500,000,000
Amount of gold in the world	7,000,000,000
,, of silver in the world...	8,000,000,000
,, of both in coin and bullion... ...	8,000,000,000
,, of both in watches	4,000,000,000
,, of plated jewels and ornaments ...	3,000,000,000
,, produced in North and South America	10,000,000,000
,, ,, in Asia, Australia, & N. Zealand	5,000,000,000
,, ,, in Europe	6,000,000,000
,, ,, in Africa	5,000,000,000

BONANZA MINES.

It is upon Fine Fissure Veins that the great Mines of the world have been located.—Name and production of some as follows:—

Bissinna Silver Mine	$ 16,311,000
Santa Anna ,, ...	21,347,000
Valaneta ,, ...	31,813,000
Parmillan ,, ...	70,000,000
Veta Madre ,, ...	335,935,000
Comstock ,, ...	365,000,000
Rio Grande ,, ...	650,000,000
Sierra Madre ,, ...	800,000,000
Potosi ,, ...	1,000,000,000

GOLD AND SILVER.

The world's annual production, of which the United States produces fully one-half, is at present ...	$200,000,000
During the last twenty-five years India has taken an average of $38,000,000, and China $9,000,000, making the annual absorption of silver of these nations	47,000,000
In the Arts the United States is using in gold and silver $15,000,000 and the rest of the world fully $35,000,000 more, making in all per annum ...	50,000,000
Counting loss and abrasion	3,000,000
We have left for the purpose of coinage for the entire world only	$100,000,000

When we consider that gold and silver are the life blood of commerce, and that commerce is already the greatest sovereign on earth, with rapidly increasing power it is evident that the amount of the precious metals must be largely increased, in order to meet the increasing demands of the world, and, therefore, over-production must not be feared. Gold and Silver are alike necessary to the world's commerce, and the fact, that for three thousand years their relative values have undergone but little change, must make them honest money in the face of all theories.

Report of the Director of the Mint (U.S.A.) gives the Amount of Circulation Feb. 1st, 1883.

	In Treasury.	In Banks & active Circulation.	Total.
Gold Bullion	$51,449,382		$51,449,382
Silver Bullion	3,761,958		3,761,958
Gold Coin	121,868,451	$405,510,541	527,378,992
Silver Dollars	97,530,969	37,874,111	135,405,080
Other Silver	27,135,244	53,428,257	80,563,501
Gold Certificates	25,107,300	47,669,640	72,776,940
Silver Certificates	4,306,650	68,438,820	72,745,470
U. S. Notes	33,592,236	313,088,780	346,681,016
National Bank Nts.	10,486,291	350,972,860	361,459,151
FractionalCurrency	7,101	7,010,992	7,018,093
	$375,245,582	$1,283,994,001	$1,650,239,583
		Or say	£330,047,512

During my visit to some of the Western Mining States in U.S.A., 1882, I had the opportunity of seeing of a portion of the vast mineral country of the Rocky Mountains, and the pleasure of spending a few days at the first National Mining and Industrial Exposition, then being held at Denver, the capital of Colorado. In this grand collection of huge specimens of mineral wealth, with the abundant information of localities, depths, widths, peculiarities and qualities of lodes from whence the samples were obtained, and the particulars as to the assay, milling and smelting value of the ores, it was possible for a practical miner to form some slight idea of what may be the future result on the world's industries, from the development of the thousands of mines on the hundreds, or I may say thousands, of lodes in the numerous mining centres in the several mining States and territories there represented, as the concentrated essence of their past wealth and future greatness.

The Denver Exposition was a grand and imposing sight, containing a marvellous display of mineral wealth from the State of Colorado, as also from the neighbouring States and territories of Arizona, New Mexico, Utah, Wyoming, Nebraska, Nevada, Idaho, Montana, Dakota, Texas and others.

To do justice to the several States in giving an outline of the value and resources of their mineral wealth, as in the display of agricultural products and specimens of manufacturing industry, would have required more time and research than I had to spare.

A general examination of the various stands in the Exposition building, as specially represented by the several counties of Colorado, impressed the beholder with wonder and astonishment as to what must be the future of that State, so young in years and yet so far advanced in the development of its mineral resources within the few years since the first discovery of its gold and silver mines. The history of the rise and progress of Denver, Leadville, and many other mining cities and camps amongst the Rocky Mountains, and an examination of the products of the various mines within the extensive districts as there represented by the exhibits would, if full justice could be done, read more like a fairy tale, or an exaggerated "Arabian Nights" story, and the narrator would, no doubt, be accused of drawing deeply on his imagination.

Facts are stubborn things, and verified statistics of the production of gold and silver from the mines, with reliable information as to the population in the various cities and towns, the maps showing the position and extent of mineral country already prospected and partially developed, with the practical evidence of the districts represented in the Denver Exhibition, holds forth such bright prospects of future prosperity as probably no other State or similar sized area of country can offer.

The extensive mineralised belt of the Rocky Mountains traverse through Colorado in a north and south direction, varying in height from 3,000 to about 14,500 feet above the sea, with a width of from 75 to 150 miles, and offer a vast field for enterprise. Some of the mining camps of this rich region are found at an elevation of 10,000 feet, and many of the mines are being worked at from 10,000 to 12,000 feet above the sea.

The National Mining and Industrial Exhibition held at Denver, in 1882, was, I believe, the first of its kind devoted more especially to the display of mineral wealth, and the means of working and developing it most economically. There have been some excellent displays of gold and other mineral products in Australia at the Exhibitions in Melbourne and Sydney, as also in London, Paris, Philadelphia and other places, but in none of them has the display of mineral wealth, with the attendant practical information, been at all approaching to the gigantic and magnificent display made at Denver; and from the success attendant on the efforts of the promoters, must have satisfied their most sanguine expectations.

The excellent example set by the holding of the Mineral Exhibition at Denver, will, I trust, ere long be imitated in London, the great centre of "finance, trade, commerce and industries." I have for some years past advocated the holding of a grand Mining and Industrial Exhibition in London, which should be, and could be, made worthy of the great interest from which is derived the chief foundation of England's wealth, power and manufacturing greatness, and that might be made as interesting, or probably of more interest, than that of any ordinary or special exhibition hitherto held.

My proposal is that the whole world should be invited to make a display of its mineral wealth with samples of its ores, the various methods of mining, dressing, cleaning, crushing, smelting, the amalgamation of gold and silver, with plans and sections of mines, and all the improved appliances now in use for conducting mining operations, and extracting the metals from the matrix.

Such an exhibition, if duly responded to, as I believe it would be, and being only fairly representative of the great mineral wealth of the world, would be a grand, imposing and instructive display of its hidden earthly treasures that at present are for the most part only known to those who have lived or worked in certain districts where they are produced, or who have had the opportunity by personal observation of forming practical opinions of the enormous value of the mineral resources of the gold and silver mining districts of the countries most famous for its supply, by travel and exploration in different countries.

When in Denver, in 1882, I proposed the initiation of such an exhibition, through the press, in a few remarks I made there at the time relative to my visit, in the *Denver Republican* :—"The exposition of your mineral wealth reflects the highest credit on the enterprising spirits who have been concentrating such a valuable and interesting collection, but I scarcely think it wise or profitable to the interests of Colorado, and other States there represented, to keep such a magnificent display of the wealth of your mountains all the time in Denver, but that, after you have had your fill of looking and admiring such treasures, it would, I think, be advisable to exhibit them at New York and afterwards in London, (England,) where I am satisfied they would not only excite great wonder and admiration, but be the means of causing much attention and capital to be invested for the further development of your apparently inexhaustible resources."

A great Mining and Industrial Exhibition, representing gold and silver mining, and the extraction of the precious metals, as also that of all other classes of mining and the industries incidental thereto, would be a pleasing and instructive method of giving practical and scientific information that is but imperfectly understood by most of those directly or indirectly interested in the results, prospects, and requirements of mining.

Some idea of the vast area of country comprised within the rich mineral districts of the Rocky Mountains and the far west of America may be formed when it is known that the States and territories of Colorado, Nevada, California, Arizona, New Mexico, Utah, Montana, Idaho, Dakota, Wyoming and Nebraska, as represented at the Denver Exhibition, covers an area of upwards of one million square miles. The exhibits formed such a display of hitherto "hidden earthly treasures," that the world had never before had the opportunity of seeing under one building.

Colorado has produced up to January 1st, 1883, not less than $170,000,000 (or say £36,000,000) in gold, silver, copper and lead, most of which was in the precious metals. According to Hayden, two hundred and thirty three different minerals have been found in Colorado; the principal of which are gold, silver, copper, lead, iron, nickel, bismuth, quicksilver, salt, sulphur, gypsum, &c.

Colorado, the "Centennial State," or the latest added to the union may be accounted the richest in mineral resources, and one destined to pour forth to the world such a stream of gold and silver as will make her name famous thoughout all time. Centrally situated as it is, embracing the highest points and greatest cluster of the Rocky Mountain ranges within its borders, this State possesses such a vast amount of rich mineralised country that its mountains and valleys will afford a profitable field of labor for a population of hundreds of thousands. Apart from its vast mineral wealth, which will employ an army of miners for years to come, the State possesses such attractions to the tourists, health seeker, business men, scientists, and settlers generally, that it is destined to become one of the most important and prosperous States of America. To the gold and silver miner it is a land of performance as well as promise; and in its vast fields of mineralised country affords ample room for exploring some of the richest treasure vaults of the world. Hitherto mining operations have been much confined to prospecting or working by small companies on limited areas of ground, not large enough to warrant mining operations on an extensive scale; but within the past few years the results of private enterprise have been so entirely satisfactory that companies have been, and are being, organised for carrying out large mining undertakings in a thoroughly well devised system, that will in a great measure revolutionise gold and silver mining, by tunnelling through great belts of rich mineral lodes, and enabling lower grade ores to be profitably worked, which by the ordinary process of shaft sinking on separate lodes, by individuals or companies on single claims or small sized areas of ground, could not be so profitably worked.

As an illustration of the importance of this system of mining I will instance two important undertakings inaugurated in Gilpin County, which is the oldest, and said to be the richest belt, of gold bearing lodes of any part of the State, or probably of America. This county, the smallest in the State, contains within its area of about four miles by three miles not less than from one hundred to two hundred fissure veins, from which has already been obtained about $35,000,000 in gold, and about $3,000,000 in silver, the deepest shaft on the top of one of the mountains is now over 1,500 feet and in some of the gulches shafts are sunk on lodes of rich ore to a depth of about 900 feet, thus proving the depths of the true fissure veins of this gold belt to be continuous to over 2,400 feet in depth, with every probability of continuance.

The greatest mining enterprise of Gilpin County, now in actual operation, is the Bonanza and Union Tunnel Mining Company, occupying the greater portion of two mountains, known as the Maryland and Casto Mountains, Central City. This Company has been duly organised with a capital stock (non-assessable), or fully paid up, of $2,000,000. To secure the purchase of a large number of properties, with tunnel rights, &c., patents for claims, to provide machinery, material and labor, to carry out this grand enterprise, the company has issued $500,000 of 6 per cent., first mortgage gold bonds.

These bonds are being issued as capital is required for carrying out the works. The Bonanza tunnel is being driven north through the Maryland Mountain which rises to a height of nearly 1,000 feet, and the Union tunnel is being driven south through the Casto Hill, which rises to a height of about 400 feet over tunnel levels, these tunnels will intersect or cross cut about 50 or 60 gold bearing lodes and will be one and a quarter mile in length, over one third of the work is already done in a first class style of mining, reflecting great credit on the management. About twenty veins have already been cut and drifted on to a considerable extent, exposing a large quantity of ore for stoping, besides a large body at the bank ready for treatment. The quantities of gold ore in these two mountains, which will be mined from these tunnels at a comparative trifling cost, will no doubt be reckoned by millions of tons, and which to all appearances, and from the known average yields of the district, may be calculated to yield from half to one ounce of gold per ton.

Following the example of this Company, another gigantic but very practical scheme is being inaugurated, and when carried out will be one of the grandest enterprises ever carried out in gold mining. The British and American Tunnel Company intend constructing a tunnel from the fall river to the North Clear Creek, a distance of over four miles in length, intersecting all the gold and silver fissure veins on its line, including the celebrated Quartz Hill, Nevadeville. Prof. J. Alden Smith, late State geologist of Colorado, in his report of this enterprise says :—" I know of no point in the whole Rocky Mountain region, where a tunnel of equal length will open so many mines of proved value as this, penetrating, as it will, the great gold and silver belts of Gilpin County, at depths varying from 1,000 to 2,000 feet. It will not only open, but drain the mines to those depths, and make it possible to work them that much deeper than is now feasible by shafts from the surface, besides affording an economical outlet for the ores extracted to a splendid water power of ample capacity for their reduction at a fraction of the present or possible cost of steam power. This will largely increase the profits on the grades of ore now mined, and enable the owners to handle profitably millions of tons now left in the workings and on the dumps, because they contain too small a per centage of the precious metals for profit above present cost of mining, transportation and reduction."

The country generally to be cut through is granitic gneiss. The veins are pronounced to be true fissures, holding their course regular and distinctly across the strata of the country rock, and without dimunition of the quantity or quality of the ore, have been proved to depths from 500 to 1,500 feet. The veins vary in width from 2 to 15 feet, with a general average of about 3½ feet, containing ore of two grades, stamp or mill ore and smelting ore, showing a general average of about 1 oz. per ton gold and 6 oz. silver. The tunnel will be constructed in height and width so as to work engines and tram waggons of good capacity, with large water-way under the floor, and at convenient places, where practicable, water will be conveyed down shafts in pipes to the tunnel workings, and its power utilised for working machinery, for rock drills, ventilation, &c., as required.

At the mouths of the tunnel large reduction works will be erected for milling and smelting of ores from the company's own mines, as also those companies who work their mines through the agency of this tunnel; and from the large number of mines now in work along the route of tunnel, it is estimated that over a thousand of tons of ore daily will be run out from the numerous mines that are now, and will be in work along the route, at a highly profitable rate. The revenue from this source, and the working of the company's own lodes, and the many new ones that will be discovered and claimed by them in the prosecution of this really grand undertaking, will in all probability make the British and American Tunnel Company, of Gilpin County, Colorada, one of the largest and most profitable gold mining properties in the world.

These, and such as these, are the kind of mining enterprises deserving of public encouragement and support, as they will be the means of developing the golden resources of the earth not otherwise attainable, and greatly increasing, and permanently maintaining, the increase of "Our Gold Supply."

When scientific knowledge and practical experience is brought to bear in the initiation and conducting of legitimate mining enterprises for the production of gold and silver in a profitable and economical manner as is now being done in many places in America and Australia, it will prove in most cases a safe and reliable field for investment of capital, with chances of profits beyond that of ordinary investments.

Our gold supply of the future depends more on the honesty of purpose, and applied practical knowledge and experience in opening and developing the golden resources of the earth, than by the flighty imaginations of visionary amateur enthusiasts, who, however adept in the art of beguiling the public to invest in shadowy schemes, promulgated by the aid of exaggerated and ridiculous reports, but who are, from want of experience, unable to judge of the merits or value of a mining property; hence they accept and put forth statements of probable results, based on ridiculous theories, that are not only absolutely misleading, but mischievous in results, as experienced by those investors who were beguiled by falacious promises on paper to entrust their capital in the hands of amateur authorities on gold mining and its management, during the late furore of Indian and African mining.

It is not merely in the Western States of America where the principal supply of gold has hitherto been obtained, and from whence its supply can be for the future not only maintained, but increased; but there are other extensive tracts of mineral country prospected in British Columbia, and other portions of Canada, as also in Mexico, the central States of America, and in the little explored country of South America, where it is known the vast basins or drainage areas of the mighty rivers of the Orinoco, Amazon, La Plata, and many other minor streams are rich in alluvial gold, while many of the mountain ranges through which they course their way, abound in rich quartz lodes, and from whence the supply of gold has for many years been materially supplemented.

The very name of Mexico is synonymous with that of rich gold and silver mines. Three hundred years ago it created intense excitement throughout the Spanish nation. The conquerors by force and treachery despoiled the simple minded natives of their accumulated treasures of gold, silver and jewels, and carried them to Spain. Mining was carried on by the Spaniards for about 300 years, and it is estimated they carried away from Mexico and Peru, from the years 1500 to 1800, not less than £1,200,000,000 sterling of treasure. It is said there is a record in an old church at Taos, that the priests collected £2,000,000 from a single mine in the Taos Mountains.

With the evidences adduced of absolute results of the production of gold and silver from the American Continents, as also the known and prospectively known rich mineral resources yet to be operated upon there need be no fear of any appreciative diminution of the supply of gold and silver for the requirements of civilisation in finance, trade, commerce and industries, if only attention be given to its production as the importance of the industry deserves.

Australia and New Zealand up to the present time, have produced somewhere about £300,000,000, and in no other countries are the evidences of the value of the gold discoveries more prominent than there.

The first real discoveries of gold were made in

1851, by Mr. Hargraves, at Ophir, in New South Wales, and by Messrs. Esmond and Hiscocks, at Ballarat; then followed exciting rushes of men from all parts of the Colonies to the New Eldorados, and fabulous sums of gold were obtained by some of the more fortunate ones, and a wild excitement arose throughout the small population then in Australia. The news soon reached the shores of England, when an unprecedented rush to the Australian gold fields at once set in. As ship after ship came home freighted with large consignments of gold dust and nuggets, the news of such arrivals, and the marvellous successes attendant on the early pioneers, induced thousands and tens of thousands of young enterprising men to flock from all parts of the world to the several gold fields.

The enormous riches of Ballarat, Bendigo, Forest Creek, Tarrangower, Ovens, Ararat, McIvor, Avoca, Maryborough, and other gold fields in Victoria attracted the greatest number of miners, who, instead of receiving encouragement at the hands of the Colonial governments, had every obstacle thrown in their way in developing the resources of the Colonies, and adding to the riches of the world.

It seems almost incredible to think at the present day that it could be possible for any body of men representing the government of British possessions to ever have adopted so insane a policy against the early gold diggers as did the governments of New South Wales and Victoria—the iniquitous and almost prohibitory measures adopted to extend the development of the gold fields were such as could only have been expected to be initiated by some insane autocrat.

Take the Colony of Victoria as an example of the result of narrow-mindedness, incapacity and vindictiveness, allied to a supercilious hauteur of demeanour of the governor and his ministry, who had unfortunately been appointed to positions they were unable to fulfil, either with credit to themselves or advantage to the community.

They made laws or regulations for the government of the gold fields to the effect that gold diggers were at first charged a license fee at the rate of 30s. per month, or say £18 per year, for the privilege of occupying a claim 12 ft. × 12 ft. to dig and search for gold; and if found without a license, the result was being taken in custody by armed policemen, handcuffed, and marched through the diggings to the camp to be locked up for the night; if there was room, to be crammed in the lock-up, if not, to be chained to a log outside all night, to be then brought up before a magistrate, and be fined £5 or a month's imprisonment, with treatment of the most brutal nature. These were the kind of indignities, insults and oppression, the early pioneers of gold mining had to contend with in Victoria. Had any sapient members of the government taken the trouble to calculate the enormous rents the diggers were charged, it would be seen, that as two men generally occupied a claim, that they were paying a rent of about £10,000 per acre per annum for occupying waste lands of the crown to raise gold to enrich other members of the community. So exorbitant were these impositions, that they were naturally protested against, when after a time the license fees were lowered to 30s. for three months; but even this was outrageous. It was during this period, 1854, I went to the Ballarat gold fields, to follow the exciting, and often times pleasurable, occupation of gold mining. The gold fields were in a high state of commotion, protesting against the impositions placed upon the gold diggers by such exorbitant rents to occupy waste lands of the crown, while the squatters, who with their friends in the government, only charged themselves about one penny per acre. Deputations, representing the gold fields, were sent to Melbourne to petition and entreat the government to reduce the charges and impositions placed upon the gold mining industry, as also to request them to refrain from enforcing the collection of the license fees in the degrading manner it had so long been done, by bodies of armed police marching through the diggings with muskets and fixed bayonets, and the troopers with drawn swords and revolvers.

The governor and his ministry refused to listen to the appeals of reason and justice, or to be guided by the dictates of common sense, but haughtily informed the deputations that they were determined to enforce the licenses as usual, and would not reduce the amount. The diggers on most gold fields held meetings to denounce the conduct of the government, and in Ballarat the then most populous field, mass meetings were held, when it was determined to resist the collection of the license fees by armed force—and many of them publicly burnt their licenses in defiance of the government, and an organised open rebellion was instituted, chiefly through the leadership of some hot-blooded young Irishmen, who took the lead, but were backed up by many English, Scotch, Americans, Italians, and other nationalities. A large number of men were enrolled in the rebel army, guns, ammunition and goods collected by requisition, pikes were manufactured in quantities, and provision made to withstand the forces that were being collected by the government to quell the rebellion. The troops and seamen, with field guns, were dispatched in haste to Ballarat, under the command of Sir Robt. Nichol, who took up their position in the government camp. While the rebel forces, under the leadership of General Peter Lalor, now the honourable speaker of the Legislative Assembly, General McGill, Col. Vern and others, took up a position on the Eureka, where a stockade was built as a kind of fort.

On Sunday morning, Dec. 3rd, 1854, the battle of the Eureka stockade took place, and was a short but desperate fight between the troops and diggers, the latter of whom were routed with about twenty or more killed and a number wounded, and a similar number killed of the soldiers, including two officers; many prisoners were taken and a number tried for high treason, but all were acquitted; and thus ended the Ballarat rebellion, which was brought about by the utter incapacity and arbitrary conduct of the government and its officials, whose unconstitutional proceedings goaded into hostility a law-abiding, intelligent and energetic body of men. The eyes and ears of the government were at last forcibly opened, and they were compelled to listen to the reasonable demands of the residents on the goldfields.

After the battle of the Eureka, martial law was proclaimed on Ballarat; no fire arms allowed to be carried—no meetings allowed—no lights in tents after 8 p.m.—no one allowed within a certain distance of government camp without a pass, and a general surveillance kept over everything and everybody, while the police were hunting after escaped rebels, and gathering evidence to convict those already in custody. For some time a reign of terror prevailed over the district, paralising the gold mining interest and business, and driving away a large proportion of the miners to other fields.

The State trials over, and the political prisoners acquitted, a relaxation of police surveillance gradually took place, gold mining and business began to assume its wonted vigour, and the enmity created between the diggers and the police gradually lessened. Charges of cruelty and wantonly destroying life was made against some of the officers and policemen, but little satisfaction could be obtained by the aggrieved parties.

The first political "cyclone" having at last blown over, the calmer reasoning faculties of the public were brought to bear upon the question to investigate the cause of the gold miners' grievances, and to provide a remedy therefor.

A royal commission was appointed to inquire into the whole matter, and the late Sir John O'Shannassy was chairman; their inquiries and recommendations led to the substituting of a yearly miners' right, issued at £1, instead of a monthly or quarterly license, and a fixed export duty of 2/6 an ounce on gold. This was accepted at the time as a compromise and solution of the difficulty. Although the gold miners of Ballarat sustained a crushing defeat at the hands of the troops and police at the Eureka stockade on the memorable 3rd Dec., 1854, they soon after gained their victory for political rights and privileges, dearly purchased as it was with the sacrifice of many lives and much contention. The gold miners were no longer a persecuted race, or ostracised by a few petti-fogging, ignorant upstarts, who had been through force of circumstances pitchforked into positions, the duties of which they had not sufficient tact or natural abilities to fulfil.

The colony at this time was under the "regime" of a nominee council and governor, who, in conjunction with the squatters or lessees of the crown lands, so framed, or caused the framing of the laws and the constitution that was to give effect to the passing of future laws, so as to give to themselves and friends the opportunity of becoming the owners of the soil of which they were the lessees.

A spirit of jealousy and hostility was engendered between the two classes of pioneers of the colony—the squatter and the gold miner. The former held possession of large tracts of country by many square miles in extent for a mere nominal sum for grazing purposes and growing wool, while the latter was only allowed (under great restrictions) to occupy for the purpose of digging for gold a few feet square as a mining claim. As an instance of the difference paid by each occupier of waste crown lands by way of rent, it will be interesting to state that the squatter occupied from ten thousand to fifty thousand acres or more in a block at about one penny per acre, while the gold miners were limited to a claim 12 ft. × 12 ft., afterwards increased to 24 ft. × 24 ft., the latter size claims when in wet sinking, requiring generally eight men to work it, each of whom had to hold a license or miner's right. Now, while the squatters paid to the State a paltry annual rent at about one penny per acre, or at the rate of £2 13s. 4d. per square mile of crown lands, the gold miners had to pay at the rate of over £10,000 per acre per annum, at the commencement of gold digging, when they were charged 30s. per month for a license, allowing two men to hold one claim of 12 ft. × 12 ft. as was usual. But even after the license fees were reduced to 30s. per three months, the amount was still a gross extortion, and when further reduced after the Ballarat riots to £1 per annum, and the claims enlarged to 24 ft. × 24 ft. square, then the rents charged to the miners were outrageously extravagant, and out of all proportion to the amount charged to other crown tenants. Thus in the wet sinking on Ballarat it was necessary to have eight men to work an ordinary claim of 24 ft. × 24 ft., and as they often took three, six, or twelve months, or more, to sink a shaft and work out a claim, the State was getting at the rate of £8 per annum for each claim of 64 *square yards*, or about £500 per acre per annum, while the squatter was charged one penny per acre, with the privilege of purchasing in fee simple a pre-emptive right of 640 acres at £1 per acre on the best portion of their runs, or reckoning by the square mile, the squatters paid rent at about £2 13s. 4d. per annum, while the gold miners paid at the rate of nearly £400,000 per square mile per annum.

Labouring under such monstrous injustice, is it to be wondered that the intelligent and enterprising gold diggers, who were raising gold to enrich the world, should rise in opposition to such inequalities of justice, or to agitate for a reform and a removal of the many injustices they were labouring under as a community, the disparity of charges for occupying waste lands of the crown by the squatter and gold miner, was rather too much to be borne with patience.

Not only did the squatters obtain or create for themselves such special advantages over the miners, but took advantage of their position as legislators and trustees of the public estate to benefit themselves at the expense of other members of the community, but they were exceptionally fortunate in having wealth created for them, without an effort on their part, through the opening of the gold fields, by the enhanced value of their large flocks of sheep and herds of cattle, something like 1,000 per cent. In fact they may be termed the fortunate creatures of circumstances over which they had no hand in creating; they became enriched beyond their highest dreams of avarice or hopes of ambition, and under no other circumstances of life could they or their descendants, in a series of generations, have created a wealth for themselves, as was created for them in one generation by the industry of the gold miners.

Not only did the squatters obtain special advantages over the gold miners, but the banks also reaped a glorious harvest from the production and purchase of gold. Buying gold with paper, and issuing an extra quantity of notes or paper money on the gold bought, was a lucrative business. Monetary institutions started on a slender foundation were enabled to buy with paper or notes (some of which were probably of very doubtful value) the gold they required as a bullion stock upon which to extend their financial operations and secure their liabilities, and upon the basis of the gold so bought they could lend an almost unlimited supply of paper for extending business operations and for acquiring land and other properties, that, under ordinary circumstances, would have been utterly impossible.

To instance the profitable results derivable from buying gold with paper and then lending paper on the security of the gold bought, the following illustration will show :—

First issue of notes representing £125,000 bought (say) 50,000 oz. of gold at say £2 10s. per oz., which coined into 200,000 sovereigns.

Second issue of notes representing £300,000 bought (say) 100,000 oz. of gold at £3 per oz., coined into 400,000 sovereigns.

Third issue of notes representing £700,000 bought (say) 200,000 oz. at £3 10s. per oz., coined into 800,000 sovereigns.

Fourth issue of notes representing £1,500,000 bought (say) 400,000 oz. of gold at £3 15s. per oz., coined into 1,600,000 sovereigns.

Thus by the issue of notes or paper money to the extent of and representing £2,625,000, enabled the issuers to buy gold (during the early period of gold mining) to the real value of £3,000,000.

The above figures are given approximately, but will show the profitable nature of buying gold with paper, and the advantages to be derived by other members of the community who could be accomodated with credit by the aid of the gold raised by the miners and sold to the banks at considerably less than its worth, thereby benefitting other people more than those who raised it.

To more practically illustrate the profits made by the banks in purchasing gold during the first few years of gold mining, we will take the years from

1851 to 1855. The yield in Victoria was 11,218,772 ounces; value realised at the prices then obtainable from banks was £40,574,362, when at the same time its value, taking it at only 80s. per oz., ought to have realised £44,875,088, making an absolute loss to the gold miners in that colony in four years and three months of nearly £5,000,000, and a proportionate profit to the banks, who obtained that amount of bullion nothing.

During this period enormous prices were charged for all description of goods and material, so that with the loss in selling of gold, and the extraordinary increase in price of the necessaries and luxuries of life, the value of the gold miner's labour was materially reduced.

The times and circumstances were exceptional, but it does not alter the fact that the production of gold, or new purchasing power, by one class of a community was in reality productive of more good to all other members of the community than to the miners who produced it, and laid the foundation of future wealth and greatness amongst many who not only never aided in its production, but to many who made futile attempts to arrest the progress of gold mining by raising obstacles to its development, and ignoring and treating with supercilious scorn the very men who were creating a wealth for them that their own efforts or industry never could have created. Thus the first settlers and agriculturists were enabled to sell the first fruits of their products, such as potatoes, hay, &c., on the gold fields at from £75 to £100 per ton. Carriers on the road obtained from £100 to £120 per ton for taking goods from Melbourne to Ballarat and Bendigo, and to some other distant fields more in proportion, or at the rate of about £1 per ton per mile for carriage. Sheep and cattle on the squatters stations that had only been of value for wool and tallow by boiling down, became suddenly converted into great value, increasing 1,000 per cent. by the discovery of gold. Large flocks of sheep, that had only been worth say 2s. to 2s. 6d. per head, were, by the stroke of the magicians wand, "gold," raised in value to 20s. to 25s., and by this sudden increase of wealth the squatter could by the sale of one sheep purchase an acre of good land, which in many instances have, by a natural increment, been raised in value without any effort of the owner, from £1 to £10, £20 and £30, and in some exceptional cases more than that per acre. Merchants, traders and manufacturers alike benefitted by the enhanced value of their merchandise dealt in, and the vast consumption in consequence of the gold discoveries, while the owners of land and house property, in and around the chief cities and towns, were alike benefitted beyond all anticipation, the rapid rise in the value of land being of such magnitude, that in many instances the less the owners did, the more money they made.

The mining resources of the Australasian Colonies are so great and varied that it would be impossible, with any degree of certainty, to calculate the future probable results. The areas of auriferous country already prospected and proved payable are so extensive, and, practically speaking, unlimited, that they will afford profitable employment to large numbers of miners for ages to come, if they are supplied with efficient machinery and appliances, and their labor intelligently directed.

VICTORIA.

This is the richest and largest gold producing colony under the British Crown. The principal gold fields are Ballarat, Sandhurst, Stawell, Maryborough, Beechworth, Creswick, Ararat, Beaufort, Maldon, Blackwood, Daylesford, Taradale, Malmesbury, Smythes, Lintons, Wagunyah, Chiltern, North and South Gipps Land, Dargo Plains and others.

The gold fields are divided into seven mining districts, viz., Ballarat, Beechworth, Sandhurst, Mayborough, Castlemaine, Ararat, Gippsland.

The approximate area of auriferous ground over which mining operations have extended, up to the end of 1882, is 1,299 square miles, and the number of distinct quartz reefs proved to be auriferous is 3,683. The total area occupied as "mining claims" under the provisions of the bye-laws of the several Mining Boards, is about 63,984 acres, and the area held under leases from the crown about 33,908 acres, —total 97,892 acres.

The total quantity of gold produced from this colony has been, from the date of discovery to 31st December, 1882, 51,436,837 ozs., at £4 per oz., = £205,747,348.

The estimated yields of gold from alluvial and from quartz mines since the year 1867, as prepared by the Mining Registrars, are given below:—

	ALLUVIAL.	QUARTZ.	TOTAL VALUE.
	Ozs.	Ozs.	
In 1868	1,087,502	597,416	£6,739,672
1869	934,082	610,674	6,179,024
1870	718,729	585,575	5,217,216
1871	698,190	670,752	5,475,768

	ALLUVIAL.	QUARTZ.	TOTAL VALUE.
	Ozs.	Ozs.	
1872	639,551	691,826	5,325,508
1873	504,250	666,147	4,681,588
1874	433,283	664,360	4,390,572
1875	426,611	641,806	4,273,668
1876	357,901	605,859	3,855,040
1877	289,754	519,899	3,238,512
1878	264,453	493,587	3,032,160
1879	293,310	465,637	3,035,788
1880	299,926	529,195	3,316,484
1881	313,828	519,550	3,333,512
1882	352,078	512,532	3,458,440

It will be seen that a gradual decline of the yield of gold set in until the year 1878, which had been the lowest in yield from 1851, but the last four years has shown a steady increase in the yield, and there is every reason to hope will be steadily improved upon.

The falling off in the yields of gold, say from 1869, was not so much the fault of the mines as the fault of defective mining legislation, the want of a better system of mining and the withdrawal of capital and labor from mining as an investment,—large numbers of miners going to other colonies, or taking up land and going into business.

As a natural consequence of the falling off in the yield of gold, businesses of all kinds dependant on the supply of gold being steadily maintained proportionately diminished, and the effects of the decline was felt by all interested in finance, trade, commerce and industries.

The production of gold in Victoria, as also in other places, may be taken as a fair indication of the prosperity of other industries, and it is satisfactory to note that with the vast area of auriferous country prospected, and proved payable, that there need be little doubt of a continuous and prosperous era of gold mining for generations to come.

That quartz mining shows by the returns as being so much more profitable than alluvial mining, is to be understood that over one half the alluvial miners are Chinese, who are content to work on poorer ground, and with less efficient appliances than Europeans, and which in the aggregate brings down the general average to a figure much below what the European miners really do earn.

As an instance of the improved prospects of gold mining, I will quote some statistics as published by the mining department showing the yields of gold, from the quartz reefs, and the average per ton in the six years 1877 to 1882:—

YEARS.	CRUSHED OR TREATED.		PRODUCE.			AVERAGE PER TON.		
	Tons.	Cwt.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
1877	965,573	15	453,372	19	9	0	9	9·38
1878	874,717	6	417,306	1	16	0	9	12.99
1879	849,324	16	372,946	0	22	0	8	18.77
1880	968,883	9	466,404	7	18	0	9	15·06
1881	1,041,212	4	455,969	14	22	0	8	18·2
1882	1,027,826	13	463,463	4	6	0	9	0·44

The following table shows the quantities of quartz tailings, mullock, &c., crushed and treated, and the results obtained therefrom during the last six years:—

YEARS.	QUARTZ, TAILINGS, MULLOCK, &C., CRUSHED.		PRODUCE.			AVERAGE PER TON.		
	Tons.	Cwt.	Ozs.	Dwt.	Grs.	Oz.	Dwt.	Grs.
1877	28,435	0	2,938	2	5	0	2	1·60
1878	38,281	14	3,502	13	12	0	1	19·92
1879	37,301	15	3,028	0	21	0	1	14·96
1880	29,140	4	2,357	11	0	0	1	14·83
1881	25,088	15	3,419	15	4	0	2	17·42
1882	17,677	10	2,088	11	17	0	2	8·71

The quantities of pyrites, blanketings, &c., treated during the past six years, and the gold obtained, were as follows:—

YEAR.	PYRITES AND BLANKETINGS TREATED.		PRODUCE.			AVERAGE PER TON.		
	Tons.	Cwt.	Oz.	Dwt.	Grs.	Oz.	Dwt.	Grs.
1877	7,359	6	13,645	3	5	1	16	21·65
1878	5,375	0	13,589	14	23	2	10	13·59
1879	5,304	3	13,014	11	8	2	9	1·75
1880	8,038	10	13,483	11	10	1	13	13·21
1881	5,967	11	13,038	13	12	2	3	16·76
1882	6,958	10	15,053	7	2	2	3	6·38

During the fourteen years (1869 to 1882), 79,004 tons of pyrites have been operated on, and a total yield of 188,681 ozs. of gold obtained, equal to an average of 2 ozs. 7 dwts. 18·35 grs. per ton.

The quantities of vein-quartz crushed, during the year 1882, and the average yield of gold per ton from the several mining districts are shown as follows:—

DISTRICT.	QUARTZ CRUSHED.		AVERAGE YIELD PER TON.		
	Tons.	Cwt.	Oz.	Dwt.	Grs.
Ballarat ...	446,754	5	0	6	14·41
Beechworth..	33,570	4	0	12	16·35
Sandhurst ...	264,513	0	0	13	7·29
Maryborough	59,257	12	0	8	7·38
Castlemaine..	107,215	0	0	5	20·51
Ararat ...	67,784	5	0	6	6·88
Gippsland ...	28,732	7	1	4	6·66

The average earnings of the quartz miners per man for the year 1882, in Victoria, were £131 19s. 6d., while that of the alluvial miners, of whom one half are Chinese, was only £68 14s., giving a mean average of £96 per man.

This average, although higher than that shown in any previous year during the past six years as per returns of the mining department would show, if the earnings of the 7,274 Chinese were eliminated, much more favorable results.

There are also other circumstances to be taken into consideration, that there are many men classed as miners who do not work steadily at gold mining all the year round, but vary their occupation occasionally by following other callings, such as harvesting, shearing, &c., when the seasons are on, while many are engaged in prospecting work, and some in fossicking where their labor is not intelligently directed, or to the best advantage, which results in what I have often called attention to in Australia, the great waste of gold mining labor through want of better management and a more efficient system of direction of capital and labor.

Alluvial mines, where the ground is fairly rich in quality and quantity, have been and can be worked with handsome profits—the rapidity with which the ground can be worked has already made the alluvial mines of Ballarat famous throughout the world—and an instance of the profitable nature of alluvial mining is shown in the returns of gold and dividends paid from seven alluvial mines in the Creswick division of the Ballarat district.

The following are the yields, dividends, &c., from the principal alluvial mines, for the quarter ending June 30th, 1883:—

NAME OF COMPANY.	YIELD.			DIVIDENDS AND ROYALTY.		
	Oz.	Dwt.	Grs.	£	s.	d.
Ristori Co., Spring Hill ...	5,540	5	0	17,022	8	6
Madame Berry Co., Spring Hill	7,067	18	0	20,221	10	0
Lone Hand Co., ,, ,,	4,357	11	0	6,484	1	0
Loughlin Co., ,, ,,	1,621	3	0	1,702	17	6
Dyke's Freehold Co., ,, ,,	1,360	0	0	2,222	0	6
South Dyke's Co., ,, ,,	107	6	12	6	10	0
New Australasian Co., ,, ,,	4,008	19	0	3,750	0	0
Approximate from Small Claims	700	0	0			
Totals... ...	24,777	2	12	£51,409	7	6

The above returns show well for the profitable nature of alluvial mining where there is a good supply of washdirt and the water not too heavy, and as some of the new mines only lately in gold (the Lone Hand and Loughlin Companies for instance) get more fully opened up, their profits will no doubt increase in proportion to the facilities afforded for blocking out the washdirt.

The two first companies which have been working in washdirt for some few years have their mines well opened out, and may be deemed good examples of practical and profitable mining management of the Ballarat system.

The Ristori Company, with an original capital of £12,000, has already paid in dividends and royalty over £100,000, and, as shown by the quarter's return ending June 30th, 1883, on a yield of 5,540 oz. 5 dwt., equal £22,160, paid in dividends and royalty £17,022 8s. 6d., or nearly seventy-five per cent. of the entire output of gold has been profit. While the Madame Berry, an adjoining mine, and similar successful Company, on an output of 7,067 oz. 18 dwt. of gold (for the quarter), equal to £28,371 12s., has paid in dividends and royalty the sum of £20,221 10s., or at the rate of over £80,000 per annum, or from 400 to 500 per cent. per annum, on its capital.

This, however, is not an unusual thing for gold mines to pay, and I could recount the history of some of the old alluvial mines of Ballarat where the output of washdirt was immense, and the profits almost fabulous. On a strip of ground known as the Ballarat and Sebastopol Plateau, being a series of layers of ba-saltic rock, drifts, and clays deposited, and overlaying the subterranean gutters, or ancient river beds of auriferous gravel or washdirt, locally known as the Main Golden Point, or Old Gravel Pits leads, with its various tributaries extending some five or six miles in length on the course of the leads an amount of gold has been taken upwards of *twenty millions* sterling (£20,000,000), and although I have not the records of the dividends from the various companies mining within that area, I should estimate from recollection that fully one half the amount, or say £10,000,000 sterling, was paid in dividends. Rich as some of the leads in this section of the Ballarat gold field was, it was not equal to other portions of the field worked in earlier days, such as the Gum Tree Flat, Eureka, Gravel Pits, Red Streak, Red Hill, Canadian and other leads of the shallow workings.

It may not be out of place here to give a brief outline of the history of gold mining at Ballarat, as it will, I trust, give some practical idea of the development of the industry on this important gold field, and having been an active participator of many of the stirring events in the halcyon days of this wonderful city, and spent so many years of my life amongst the enterprising spirits who made the name of Ballarat and its miners, speculators, and business men famed throughout Australasia, as also in other parts of the world, I feel a pleasure in recalling recollections of the past, as also hopes of the future, of a place to which I am naturally much attached, and take a pardonable pride in holding up the intelligence, energy and enterprise of its citizens and representatives of the mining industry as an example worthy to be followed in any part of the world.

After the excitement attendant on and after the outbreak of hostilities between the diggers and the government, in consequence of their unconstitutional proceedings, as I have before stated, the colony entered on a new area of prosperity based on the firm foundation of a "new constitution." This important epoch of its history was 1856. Under the provisions of this constitution responsible government was inaugurated, the colony divided into constituencies, a new parliament elected, and an era of permanent prosperity established.

The increased difficulties of mining also necessitated the alteration of the mining laws, and the methods of conducting gold mining operations, whereby larger areas of ground should be allowed for claims. Seven mining districts were established, embracing what was known as the auriferous portion of the colony; each district elected its own mining board, who were empowered to frame bye-laws for regulating the areas and titles to mining claims. The Ballarat "mining board" initiated two systems of mining laws, one based on common sense, and the other on a chimerical idea. By the former, quartz reefs and alluvial workings, such as surfacing on old ground workings, the claims had a defined area; but by the latter the titles on all known alluvial leads or gutters were under the "frontage system." This system professed to give a title on paper to a claim on some lead or gutter, which may have had no existence in fact. The idea of securing a certain number of lineal feet along the course of a rich auriferous lead or gutter by merely registering the names for application in the surveyor's books, at first appeared a very easy method of making sure of a good claim, and it is not to be wondered at that applications for registration were numerous, and as the surveyors were paid by the fees, they were not likely to place restrictions on the applications for claims. Such a system may have answered very well for claims on creeks or streams on the surface, but proved utterly delusive for securing titles to claims on golden streams 200 to 500 feet under the surface, it being impossible to identify one lead from another, as nature had not placed any distinguishing mark upon them.

Under the Ballarat and Sebastopol Plateau there were the following distinct leads or gutters, all when registered on, or discovered, taking a due westerly course:—The Old Gravel Pits, Golden Point, Malakoff, Nightingale, Miners Right, Redan, Woolshed, Terrible, White Horse, Frenchmans and others. The two first, having merged into one, became afterwards known as the Golden Point Lead, took a very torturous, but southerly course, ultimately merging into junctions with the other smaller streams as it went south. The consequence was that many of the prospective registrations of titles on leads that had no existence in fact, were not only delusive, but valueless.

Some of the mining companies registered for titles on those leads which had no existence after merging into the older lead, or which could not be found, bottomed their shafts on some other lead of gold, which they religiously stuck to, worked out, and, when allowed, pocketed the gold; nor could they be much blamed, as no one could tell to whom the ground really belonged. It was a sort of "No Man's Land" on a Tom Tiddler's ground,—everybody claiming it, and no one able to prove a right in law, because no law could divine into an unknown course the leads or gutters might take, and it was only until the ground was all, or nearly all, worked out, that it became possible to define the areas of claims and to whom such areas belonged under the frontage system.

The ground was exceptionally rich, and each company that were getting gold took good care to keep it, regardless as to who (if any) had a better right. This, of course, naturally led to litigation in every direction, and there was not a company on those leads that did not become involved in law almost from the time they commenced getting gold until they worked out. It created a jealous feeling and bitter enmity amongst neighbouring companies, alienated the friendship of individuals, and oftentimes led to rough fights and bloodshed underground and above. It (also unfortunately) created a distrust in gold mining as an investment in the district, and cast a stigma on the industry wholly undeserved; it retarded the systematic and more economical development of the mines; it entailed an extravagant waste of money in law, and a useless expenditure of time and labor that might have been devoted to a more profitable purpose.

This was the result of "The Frontage System." The amateur mining law makers, who were the authors of this delusive and impracticable measure, started with a blunder, and kept on blundering every time they tried to amend it. Having gained a little local popularity on its introduction, they were afterwards reluctant to acknowledge the error by repealing the obnoxious measure, until it had to be abolished by its own iniquity. I can but re-echo the words of denunciation I made against it at the earliest time, when its evils were so apparent, that it was the most absurd and ridiculous measure as a mining law that ever emanated from the deliberations of any body of men who claimed to be practical miners. For several years I denounced the system through the press at every opportunity, and challenged the authors or upholders of the system to show that it had any redeeming features, until the reform in mining law I had advocated was carried into effect.

I have mentioned this matter to show the urgency that all mining laws should be of a simple, definite and liberal character, that under no circumstances should there be any conflicting interests as regards title, within the same area of ground held for mining claims. No matter what shape, size or area of ground be granted as a mining claim, all minerals within the limits should belong to the owners.

Having been associated in the management, and treasurer of the "Old Gravel Pits Gold Mining Company" from 1856 to 1858, it being one of the first companies to get in operation to work the gutter under the "Frontage System," and at that time the largest Co-operative Company in the gold fields, I was in a position, from careful observation, to foresee what would be the likely results of the future working of a system that gave no definite title to mining claims, as also to assist in the introduction of improvements in the system of gold mining, and appliances for working that materially aided the more economical development of the industry.

The inauguration and maintaining a system of management in a large company of working shareholders, where every man had equal rights, and where many considered themselves not only equal in ability to work but superior to others, was not always the pleasantest part of gold mining; there were no fees for officers nor members of committee, and, excepting the secretary, each had to take his regular work in the shaft or underground, besides taking charge of the shift he was working in. Selections had to be made of those most fitted for special works, which of course did not always give satisfaction to the parties concerned; however, the rules and regulations were made strict, and could be enforced by fines.

Extensive and costly works in shaft sinking, in some cases taking several years, were carried out under this system of co-operative labor, but it was eventually found advisable to convert the then co-operative companies into joint-stock companies, under the Limited Liability Acts, and under which system all large mining companies are now carried on. Then ensued the mania for mining speculation, and the gradual establishment of that noted mart for share-dealing and promotion of companies, the "Corner" at Ballarat.

As instances of the difficulties of defining the rights of companies under the frontage system, I may mention that on the Golden Point lead on Crown lands beyond the private property of the township, were the Extension Company, the New Constitution Company, the Cosmopolitan Company, the Kohinoor Company, and the Band of Hope Company. Now the parallel lines of these companies represented by registration a length of some two or more miles on the supposed course of the golden point lead, or a right to follow the course of the lead anywhere within the sweep of the parallels to the west, north or south, and to suit their purpose they could swing their imaginary boundary lines anywhere within the points mentioned. Now, as other companies registered on other leads running under this plateau had similar supposed privileges, it was soon easy to foresee the complications that would ultimately arise about titles.

It took many years to trace the course of the golden point lead through the first four companies, and when proved by the workings of the Kohinoor Company, it was found that instead of the lead going westerly it had taken a sudden bend and gone due south, thus leaving the Band of Hope Company's shaft nearly a mile away from the lead they had been sinking for,—which after ten or twelve years' labor, time, and at great expense, was ultimately proved to be on another lead altogether. The Great Extended Company, registered for claims on the Redan lead, bottomed their shaft on the Golden Point lead, which, by right of registration, belonged to the Band of Hope Company. The Extended Company being in possession, stuck to their rich ground for years, and to all the gold they got, and divided £3,000 per 80th share; it was not likely they would quietly relinquish a claim giving such good results, with plenty of money to fight with, and the shares worth some £3,000 each at the time; nor were the lawyers likely to give up a case that had been so profitable to the profession.

The disputes, like all others under the system, had to be settled by compromise and amalgamation, on a basis of common sense, the only possible way of settling disputes about such indefinite titles.

Then, lower down the plateau, other companies became similarly involved in dispute, until the whole place was entangled in a network of lawsuits, with no possibility of the law courts being able to decide the rights of parties, because the boundaries of claims, and the length and course of the leads, could not possibly be determined until they were worked out. The whole system proved to be utterly impracticable, "a delusion and a snare; it lulled people into a fancied security of tenure of titles which dearly bought experience proved to be wholly delusive."

It was not merely the enormous waste of money in law to prove an imaginary title into an actual fact, but it was the waste of time and labor and general insecurity of tenure that created such an uncertainty about title, which ultimately ended in law, until the parties concerned were wearied and disgusted; when common sense had to be brought to bear, instead of the vendetta-like and malignant feeling that law had engendered, to effect compromises and amalgamations, as I had often advised them, to finally settle the disputes. Foreseeing what difficulties were sure to, and did after, arise from the iniquitous system, I exposed the absurdities of the measure, and endeavoured to effect the only reform capable of remedying the evil by advocating its total abolition. The whole system was so devoid of common sense that it could not be amended, and the tinkering attempts to do so were miserable failures. The putative authors of this wretched specimen of legislative wisdom became ultimately ashamed of the hobby on which they had ridden into temporary popularity, and finally allowed it to be gradually and ignominuosly abandoned.

In 1863 I endeavoured to cut the gordian knot of the difficult entanglement of law by effecting an amalgamation of the several companies then interested on a common basis of valuation of interests at the then market value, and instituting arbitration for law. The arguments I used were admitted to be correct, and approved of by the "judges of the court" as the only solution of the difficulties; but prejudice and self interest in prolonging the suits at law with overweening vanity and arbitrary actions of the then management of the Band of Hope Company, who were determined, if possible, to sweep off all other companies from the radius of their magic lines, prevented the amalgamation being entered into, and thus putting an end to litigations. Had the views I proposed been adopted, it would not only have settled all disputes at law and equity then involved, but would have increased the value of the stock and shares by over £1,000,000 sterling, and would have inaugurated an improved system of mining and its management at an earlier date. In lieu of frontage or indefinite titles I advocated that all claims in any place should be a defined block or area, and not a series of imaginary lines sweeping all points of the compass at will. As regards the area of ground in dispute, the Legislature could have been induced to pass an Act of Parliament for a special lease to be granted, covering all the crown lands between (say) a line from Sturt Street (a centre of Ballarat) south to the Bonshaw Company (a freehold mining property) to be bounded on the east by the Yarrowee River or the Sebastopol Road, and on the west by the private or sold lands,—an area of about two-and-a-half miles by one mile. I estimated the value of the various interests then involved at their then market value at a little less than £1,000,000 sterling; but which, by a combination of interests and settlements of all disputes in law, and securing an indisputable title, would have doubled the value of the interests in less than six months after being carried into effect. And it would have been the largest and richest gold mining Company in the world, as from out of that area of ground there has been already obtained nearly £20,000,000 sterling. The mines would have been more systematically and economically worked under one management, and a system of drainage introduced that would have prevented the flooding out of the alluvial workings, as is now the case, thereby stopping the development of the quatz lodes underlying the alluvial deposits.

The views I put forward from the first had ultimately to be adopted by some of the companies, and sanctioned by the courts of law as the final and only solution of the difficulty created, but it was at too late a period to have the full effect I desired and intended.

When I first attempted to bring about an amalgamation of all this large group of valuable gold mines, it was with a view not only of the concentration of interests under one system of good management, but when that had been effected, the company could have become, as I intended it should be, bankers on their own gold, and the "Australian Gold Bank" would have been the wealthiest financial institution in Australasia, with over £1,000,000 sterling of new gold annually to work on, obtained from their own mines. Supposing only one-fourth of the gold raised had been reserved for banking operations, the company would have created a capital in gold as a basis of financial business of not less than £5,000,000 sterling, and the profits of utilising only a portion of the new wealth the shareholders in the mines were daily producing would have created a permanent profitable interest in utilising the gold for future financial purposes as a banking institution, after the mines had, if they ever would in our time, become exhausted.

This company would have been independent of outside capital or assistance, and merely required to coin a portion of their own gold and issue their own notes on their own securities of gold and other properties. Such an institution, managed by intelligent men who knew and understood the requirements of gold mining, would have had a marked success, and materially advanced the mining interests, which it would have been their special care to encourage. My views on this question were highly approved of by many intelligent and thoughtful men, but the idea of utilising gold after raising it was not sufficiently understood at the time by my fellow miners and citizens of Ballarat, although they have lately become alive to the idea, and some of my old friends, whom

I desired to co-operate with me twenty years ago, have lately established a banking institution amongst themselves, which will no doubt be attended with success.

It is by a combination of capital and labor, judiciously applied, that will advance gold mining interest with more profitable results, and under the guidance of good management, enable many mines and districts now lying idle to be fully developed with profit and advantage.

The profits of all mines have to come from the miners pick and drill, it is therefore essential they be well sharpened and pointed in the right direction, and that as many should be kept at work as can conveniently and economically be done.

The designing and laying out of mining work requires not only thoughtful consideration of future contingencies, which should be provided for, but a blunder once made at the outset, and perpetuated, can only at great loss of time and money be ever retrieved; or the failing to take advantages of opportunities as they present themselves is attended also with similar loss. Gold mining, whether from deep alluvial leads, quartz reefs, or placer mining, especially in new districts where the geological formations, the depths and strata have not been fully proved, requires to be entered into with care and judgment, or else it is easy to run into an extravagant waste of time and money for little purpose.

There is probably no other industry in which so much money can be quickly and irretrievably wasted through ignorance and extravagance as there can be, and has been, in attempts at gold mining. In Australia, some years since, I gave it as an estimate that during the early period of gold mining that nearly half the labor and capital spent in gold mining had been wasted or misapplied, partly through bad mining laws and partly through the want of a better system of organisation and direction of mining labor, or from want of adequate appliances to overcome difficulties that had to be encountered.

When the result of gold mining depends so much upon good or bad management in the expenditure of capital and labor, it is surprising that so much of its development should be placed in the hands of inexperienced persons, whose incapacity not only brings discredit upon the mining interest generally, but retards the development of a most legitimate and profitable industry.

It is not merely that money is wasted in useless labor and appliances in or about a mine, and experimenting at the shareholders expense, but directors are too often at fault in selecting such inexperienced mining managers, and indulging in such extravagant official expenses out of all proportion to the work done, and shareholders are too prone to gloss over irregularities, blunders and extravagance rather than expose such errors and alter the system of management they have been indulging in for fear of affecting the market value of shares.

When it is determined to go into mining it should be done properly—to work economically, it should be done expeditiously—not to dawdle over the work and spending more money in superintendence than is expended in labor in the mine. Such blundering and mismanagement can never pay, no matter how rich the mines may be.

When progressive or prospecting labor is determined on, it should be pushed on with all expedition possible, as the quicker the results are proved the better and cheaper will it be for those who have to pay for it. Thus, in shaft-sinking as many men should be kept below as can conveniently work, there is no more surface labor required for four, five or six miners working in a shaft than there is for one or two, while more than double or treble the work gets done in the same time.

In quartz mining it is generally necessary that the main shaft should be kept continually sinking, while levels should be opened for development at intervals of from 60 to 100 feet, as experience may guide the manager. The neglect of keeping progressive work well ahead is oftentimes attended with much loss, not only in time wasted, but in depreciation of the value of a mine.

As an instance of this, I remember a noted quartz mine in Victoria, which had paid very handsomely in dividends for years amounting to nearly £400,000, and on its great success the stock in the company and its tributes had become inflated to a price representing nearly £1,000,000. I inspected the mine in 1872, and on reaching the bottom level at 600 feet, I noticed from the state of the shaft that no sinking had been carried on for a long time, and found, on inquiring from the mining manager, that it had been standing at that depth for six years. On examining the workings I soon perceived that the bulk of the good quartz had been worked out, and that no preparation had been made to keep up the supply at deeper levels. The management had been defective, and the mine had evidently been worked more for market operations than effective working.

The consequence was that when the state of the mine became known, the value of the stock fell nearly £800,000 in a few months, or more than enough to pay the entire wages of all the 6,000 gold miners working in the Sandhurst district for a year. Now the loss of that money, or any portion of it, by individuals (or even the imaginary loss) was not really losses in mining, but merely losses in gambling and speculation. The mine had for years been a wonderfully profitable one, and if it had been worked according to the principles of legitimate mining the stock never could have been subject to the chances of such a sudden and enormous depreciation.

One of the greatest wonders in connexion with gold mining industry, when any new discoveries have been made, and a rush sets in for investments, is the surprising rapidity with which amateur authorities spring into existence. There are those who, by a stroke of luck have made a lucky speculation in shares, or obtained a concession or claim in or near a locality where gold might have been seen or expected to be found, arrogate to themselves the position of oracles on the subject of gold mining, and assume a knowledge of an industry that can only be acquired by long practical experience and intelligent application.

Some of these amateurs, who scarcely ever saw a gold mine, or know anything of the proper method of working one, will write reports and undertake the control of works of which they are completely ignorant. The natural result follows that large sums of money have been squandered in the purchase of mines at fabulous prices, and further wasted in disgraceful management. At the expense of the shareholders and their unfortunate dupes, these mushroom authorities enjoy a butterfly existence during a brief period of sunshine (while the money holds out), when they suddenly collapse, and fall into the obscurity, from whence it is a pity they ever emerged.

The mischief created by these amateur authorities on gold mining, is, however, incalculable, as it is not merely the money they waste in gaining experience, and making a muddle of everything at other people's expense, but their utter incapacity brings discredit upon the industry of gold mining generally, and retards the development of legitimate mines by experienced persons.

The reports which have appeared from some of the amateur mining managers in India, and West Coast of Africa, from time to time since the rush set in for gold mining in those places, were enough to condemn the writers as incompetent for the positions they had undertaken, and the shareholders have found to their cost the mistake they made in their selection of managers so unacquainted with practical mining, and some directors who were so easily imposed on by unreliable reports, and who indulged in such extravagant expenditure.

The result of the wretched fiasco of the Indian mining, of which such a FURORE was made without sufficient cause, was nothing but what might be expected by practical men; there was nothing to show, not even from the first reports, that the mines would ever meet the sanguine expectations of the vendors and shareholders.

The reports and prospectuses, as they appeared, when analysed by any practical mining authority, were found to contain no substance or facts to go upon, it was mostly bunkum and moonshine, based on suppositions and theory. Very little, or, in many cases, no practical development had been done; some outcrop or blows of hungry looking quartz were magnified into permanent reefs, without having been sunk on or prospected a foot below the surface. Assays were made from picked samples of stone, on which were based calculations of profits of the most wonderful kind. Clever mathematicians produced an array of figures of such charming exactness that they were quite amusing to read, which had such a fascination upon admiring shareholders that many had no doubt built their ethereal castles as to how the enormous profits were to be enjoyed in the future, little dreaming of the utter collapse of the brilliant prospects as shadowed forth by the vendors and directors.

There was nothing in any of the glowing reports and prospectuses as issued at the time to warrant any of the ventures being considered (by practical authorities) otherwise than as prospecting mines, and not worth paying large sums of money for the privilege of looking for gold in an entirely new gold mining country.

Prospecting for gold is a very legitimate undertaking when capital and labor are united and judiciously applied in developing the resources of any likely looking country. The best gold fields in Australia and America were discovered by energetic prospectors who pushed forth into the bush forests and mountains beyond where others had been. There is a wide difference between a prospecting mine in a new country, and a well developed, or a partially developed mine in a well known mining district,—thus in the first case everything is new and the value cannot be adjudged by a first sight, but must be proved by experience and development—while in a well proved district, or on a line of reef that has in places been proved to great depth, there is something more tangible to go upon as a guarantee for paying an increased price for the prospects of a mine on a good gold field than one entirely unproven.

Had the Indian mines been treated as purely prospecting mines until well developed and proved payable or otherwise, the work might have been done at a very moderate outlay, in comparison to what has been so lavishly and injudiciously expended; high born hopes would never have reached the pitch they did, nor would the wail of losses have been so great as is now the case, after so many failures.

It is well known that practical opinions honestly expressed on mining matters do not always find favor with those interested in keeping up a fictitious value to an ill managed or useless project. It was the case in India, it was the case in Africa, and is often the case in other parts of the world.

When a doctor is compelled to tell his patient, or a lawyer his client, that his case is hopeless, he only offends the individual patient or client, but when a practical mining Engineer reports unfavorably against a mining property he is most likely to offend not only the bulk of shareholders and directors who employ him, but those in charge of the mine as well. No matter how great a fraud might have been perpetrated in palming off the mine as a valuable property, or how great a muddle might have been made of the work, those interested or responsible don't like being told they have been in fault, or that their judgment was wrong.

That there should be a pleasurable excitement attendant on investments in gold mines is not only natural, but desirable, for the variable incidents in the prospects of gold mines give a zest of pleasure to the worker in the mines, as also to investor in stock or shares; there is always enough genuine excitement in the hopes of improved prospects of gold and silver mines to warrant a natural, but pleasurable, feeling of interest in the results, beyond that presented by any other form of investment. The half yearly balances of ordinary businesses or institutions, which can only be depended on or reasonably expected to pay a dividend of more than five to ten per cent. per annum, are looked forward to only in a prosaic way; but in gold mines, the yields of gold are looked forward to with an exciting pleasure and interest by all associated in the enterprise, and the profits are regulated more by the quality than the quantity of the matrix operated on, and as many of the ordinary dividend gold mines pay from 50 to 500 per cent. per annum on the capital invested, it is but reasonable to think that gold and silver mining will always present features of enchantment to many desirous of participating in the extra profits to be derived from the production of gold beyond what can be obtained from other industries.

That many good mines have been ruined through bad managemement and want of judgment, cannot be denied. As an instance, the National gold mine at Buningyong, near Ballarat, was originally held by a party of forty miners working under the co-operative system; they had spent about seven years' labor on the mine and about £270 per man in cash, which, through want of proper direction in developing the property, had been in a great measure wasted, becoming involved in debt to the Bank for some £1,800, the mine was sold off—the new purchasers appointed a thoroughly competent mining engineer to take charge of the property, which, with the judicious expenditure of a small sum of money, soon developed into a rich dividend paying mine, paying something like £50,000 in dividends in a few years to the shareholders. The engineer alluded to requiring a well-earned holiday, resigned his position, another manager was appointed in his place, who, unfortunately, not possessing the judgment or experience of the other, removed a barrier of good solid ground that had been left purposely to keep out the flood waters from adjoining mines, and caused this splendid property to be ruined by a flood of back water, leaving tons of gold in the ground now swamped.

This brings me to the question of the value of forethought and judgment in designing and laying out the mining works for economical and profitable development of gold mines, and it is through that, in a great measure, our gold supply of the future will be maintained or increased.

The present position of Ballarat, through the failing of the gold supply in its immediate vicinity, is due to the neglect of its mining industry—the rich alluvial leads which were originally discovered in and close to the place, ultimately merged into one main trunk lead, which has now been traced and partially worked for many miles below in a southerly direction, and the various mining companies had some years since connected their workings from the Band and Albion Company to the National Company at

Buningyong, of a distance of eight to ten miles, and the lead has been proved for several miles further below.

It may be estimated that some twenty-two millions sterling in gold has already been taken out of this partially worked section of auriferous country, and about thirty deep and costly shafts are standing idle that might still all have been in a profitable work if a little unity and forethought had been displayed at the proper time, but which are still capable of being utilised profitably, if measures are adopted for the purpose.

The whole of this vast area of alluvial country, and the numerous lines of well known quartz reefs underlying the alluvial deposits, can only be worked by carrying out an effective drainage, as has been designed and reported on by Mr. Murray.

The idea has been mooted many years, and I was among the early advocates of the proposal, as also the tunneling through the White Horse ranges.

Mr. Murray's proposal and plans show that an adit or tunnel should be brought up the valley of the River Yarrowee to the Perseverance Company's shaft, where it would tap the main lead, and thereby draw off the whole of the flood waters which have created such a loss and depreciation of property and a decrease in the yield of gold—the distance of this adit would be about 4 miles 43 chains, and the estimated cost of construction is only £38,000; but if it cost twice the money, it would be a grand work for future results, as it would effect a natural drainage of an immense area of country that would enable thousands of miners to find profitable employment for ages to come, and that would, in my opinion, be the means of adding not less than one million sterling of gold to the annual yield of Victoria, and not only maintain, but steadily increase the prosperity of Ballarat and its surrounding districts.

I am surprised that the carrying out of such a work should have been so long in abeyance. A national public work of such utility, if not carried out by private enterprise, should be carried out by the goverment or local bodies interested.

I am satisfied that gold to the value of from twenty to thirty millions sterling lies buried in this section of country that may be very profitably mined if these flood waters were released by this proposed adit or tunnel.

One of the great misfortunes that the gold mining industry of the colonies have labored under has been the apathy and absolute want of knowledge of the requirements of mining by the legislators, the interest they take in the subject is very small, and it is seldom that the Minister of mines ever knows anything of mining.

If the colonists of Victoria desire to see their mining industry more fully developed, they must pay more attention to present and future requirements of practical work in more economically developing the vast resources now lying idle for the want of a judicious combination and expenditure of capital and labor in large progressive works.

From my own personal knowledge of the mineral resources of Victoria, if they were now being more fully worked, would afford profitable employment to 100,000 miners or more, and the gold production ought to be increased from ten to fifteen millions sterling annually.

With such an increase in new purchasing power, what would be the result of the progress of other industries might be imagined from the marvellous strides made in the material progress of the colony through and since the discoveries of gold.

To show how inadequate are the number of gold miners now employed in Victoria in proportion to the area of proved auriferous country, the total number of miners employed are only 36,890, of whom 7,244 are Chinese. The area of ground held under mining leases is 33,908 acres, and the area held as claims 63,984 acres, or at the rate of only one miner to nearly three acres.

There are 3,683 distinct gold bearing quartz reefs actually proved to be auriferous, and in which there are only 15,871 miners working. Many times that number might be profitably employed in quartz mining alone, if provision could be made for supplying efficient mining machinery and appliances.

The following is a summary of the average yield of gold from certain parcels of quartz crushed in 1882 in the several mining districts, from returns made by the mining surveyors and registrars:—

MINING DISTRICTS.	TONS CRUSHED.		TOTAL PRODUCE.			AVERAGE YIELD PER TON.		
	Tons.	Cwt.	Ozs.	Dwt.	Grs.	Ozs.	Dwts.	Grs.
Ballarat District ...	466,754	5	154,040	16	0	0	6	14·41
Beechworth District..	33,570	4	21,285	19	19	0	12	16·35
Sandhurst District ...	264,513	0	175,951	9	12	0	13	7·29
Maryborough District	59,257	12	24,614	11	10	0	7	3·38
Castlemaine District..	107,215	0	31,386	0	23	0	5	20·51
Ararat District... ...	67,784	5	21,306	16	20	0	6	6·88
Gippsland District ...	28,732	7	34,877	9	14	1	4	6·66
Totals... ...	1,027,826	13	463,463	4	6	0	9	0·44

NOTE.—The above table does not show the total quantity of quartz crushed, but only the yield of certain crushings, of which information could be obtained.

Since the publication of the statistics, information has been obtained concerning 19,130,453 tons 5 cwt., which have been crushed and yielded 10,176,992 ozs. 12 dwts. 2 grs. of gold, being an average of 10 dwts. 15·35 grs. per ton.

The above shows a fair average result of quartz mining in Victoria ; but what I desire to show now is (as also is what I have pointed out repeatedly), that the magnificent auriferous resources of that colony are not utilised to the best advantage, nor the gold-mining industry done justice to.

The supplying of machinery and appliances for mining is one of the most important questions in connection with the profitable working of the industry, and offers a wide field for the profitable investment of capital where the value of mines and their requirements are understood.

The value of the mining plant now in use in the colony is about £2,000,000, or at the rate of £54 per head of population of the miners. With increased appliances for raising and reduction of ores, the yield of gold would soon be materially increased.

If capitalists or companies were to give more attention to the supplying of mining machinery on the principle of payment by results, they would find a wide field for its profitable employment. Many quartz reefs on various gold fields are standing idle that could be profitably worked if suitable machinery could be furnished on moderate terms. Large numbers of working miners would be found who, having a special knowledge of districts, would be prepared to undertake the working of gold mines, and give a fair percentage or royalty on the gross yield of gold from the mines that would give a handsome return for the outlay.

As shown by the average yields of large quantities of quartz crushed that the yield for the Colony is nine dwts. per ton, and from the facts demonstrated that quartz averaging only three dwts. per ton can be and is now being worked at a good profit, it fully warrants my statement that the supply of fairly payable quartz in the great number of reefs and extent of quartz is capable of affording profitable employment for large numbers of extra miners beyond those now engaged.

There is a vast area of alluvial gold workings yet to be opened out and profitably worked in Victoria, and many thousands of acres of ba-saltic plains surrounding or adjacent to gold fields will be found to be permeated with rich alluvial gutters or leads. The discoveries of the rich leads under the ba-salt on the Creswick and Clunes Plains, as also on the Smeaton Plains, will be sufficient inducement to encourage the prospecting of similar plains adjacent to other gold fields; and with the improved appliances for mining and overcoming the difficulties of water, there can be little doubt that there will be a large increase of gold from the alluvial gold mines of this already justly celebrated gold producing colony.

To illustrate the rapid progress Victoria has made through the results of gold mining, I will give the Government statistics for the year 1850, about nine months prior to the gold discovery, also for the year 1872. The figures speak for themselves as to the material progress in 22 years.

Years.	Population.	Immigration.	Emigration.	Flour Mills, &c.	Manufactories, Works, &c.	Land Sales.			Live Stock.			
						No. of Acres.	Amounts Realised.	Acres under Cultivation.	Horses.	Cattle.	Sheep.	Pigs.
							£					
1850	76,162	10,760	3,304	22	46	40,442	97,970	52,341	21,219	378,806	6,032,783	9,260
1872	770,727	27,047	25,295	163	1,191	752,161	859,142	963,091	185,796	812,289	10,575,219	193,722

	Shipping.				Exports of Colonial Produce.						
					Gold.		Wool.		Tallow.		Hides & Skins.
Years.	Vessels Inwards.	Tonnage.	Vessels Outwards.	Tonnage.	Quantity	Value.	Quantity	Value.	Quantity	Value.	Value.
							lbs.	£	lbs.	£	£
1850	555	108,080	508	87,057	—	—	18,091,207	826,190	10,056,256	132,863	5,196
					oz.	£					
1872	2,104	666,336	2,234	694,426	1,298,839	5,197,340	58,648,977	4,651,665	22,656,088	353,358	49,169

Years.	Imports Value.	Exports Value.	Revenue.	Expenditure	Schools.	Scholars.	Churches and Chapels.	Convictions.
			For the Service of each Year.					
	£	£	£	£				
1850	744,925	1,041,796	259,453	196,440	160	6,807	28	111
1872	13,691,322	13,871,195	3,734,422	3,659,534	1,936	160,743	2,295	430

As an instance of the profitable nature of gold mining in Victoria, the following letter, as published in the *Mining Journal*, will give some idea. It may also be stated the dividends from the gold mining companies for the year exceeded by nearly twice the amount that of all the banks, insurance, trading companies, and monetary institutions.

(*From the* MINING JOURNAL, *December* 8, 1883.)

AUSTRALIAN GOLD MINES.

SIR,—At the present time when our gold supply is of such importance, and the subject of gold mining is apt to be met with disfavor in consequence of so many disastrous failures of ill-managed companies formed with the intention of mining for gold, it may not be uninteresting to give some account of the profitable nature of gold mining in Victoria, as represented by the undermentioned list of standard dividend mines now in active operation. It will be seen that six-and-a-half millions paid in dividends are from quartz mines, while less than one million sterling is represented by alluvial mines. Since the working out and flooding of the old alluvial mines on Ballarat, that district has not contributed much under that heading, but rests on the glory of its former magnificent yields from the alluvial leads that were worked under and around Ballarat, producing upwards of fifty millions sterling in gold. A correspondent in Melbourne, who has acquired much practical and scientific knowledge of the resources of Australia as a field for enterprise, writes me as follows:—"For your use and information I enclose a list of the public dividend-paying mines in Victoria. The dividends given are simply those paid since the mines have been in public possession, and not those paid to the original private owners, the latter, as you are well aware, no inconsiderable sum, when inexpensive mining at shallow depths was carried on. This list is for the month of June this year, and several companies that have paid dividends since, but not previously this year, are not in the list.

In my travels I see many mines prematurely abandoned, owing to reckless expenditure in drink, &c., by the miners of the wealth got out, and for want of some of which to erect machinery the mines have been abandoned or let on tribute. I know of two or three really valuable properties now that could be obtained for a few hundreds of pounds sterling, out of which very large sums of money have been got, up to over £100,000, and the reefs in them not worked to more than 150 to 200 ft. in depth. But you know, although people at home, as we still call the mother country, may not be able to grasp it, we have boundless outlets for capital in this Continent, and too little capital and too few people to work up our natural resources, and fortunes lie begging.

This is not my usual strain of talk, but when I think of the opportunities here for capital to be profitably invested (in an English governed country) in mining alone that I cannot help it. Had we one-half the capital that went to India invested judiciously here I believe we could have paid them back the outlay twice over in this time. Even our best mines here are only reckoned at from two to three years' purchase, and why is this? Because of the general demand for capital, and the forcing of the output to the neglect of development works. No doubt money could be well invested here, and many of our mines would and do return the market price in full every two to four years, and I believe that by cautious purchase the greater part of many of our best dividend mines might be gradually bought up, and thus the management be obtained or sufficient power got to get the mines worked for the investors and not for the markets, up and down. The value of shares would then increase and be steady also. But I am still inclined to think that quite as good opportunities offer in buying cheap good mines that are next to abandoned through want of capital."

The following is a list of the Dividend Mines of Victoria for June, 1883 :—

QUARTZ.

Name of Company.	No. of Shares.	Limit of Shares.	Amount paid up per Share.	Dividends Paid.	
				Since May 12.	Total.
A 1 Perthshire, Stawell ..	15,280	£2 10 0	£1 3 5	..	£ 7,194
Acadia, Catherine, Sandh.	24,000	1 0 0	0 12 3	..	22,200
B. of H.& Alb. Con. Ballrt.	22,450	20 0 0	20 0 0	..	458,542
Band of Hope, Ballarat..	12,000	0 5 0	0 1 0	..	20,500

QUARTZ—CONTINUED.

Name of Company.	No. of Shares.	Limit of Shares.	Amount paid up per Share.	Dividends Paid.	
				Since May 12.	Total.
B. of Hope, No. 2, Ballrt.	10,000	0 5 0	0 4 6	..	5,750
B. of Hope, No. 4, ,,	12,000	0 5 0	0 1 3	..	10,350
Black Horse, Egerton	10,000	2 0 0	1 5 6	..	68,000
Belmont & Saxby, Sandh.	30,000	1 0 0	0 11 6	750	58,500
Bruhn's Freehold, Sandh.	27,000	1 0 0	0 10 0	3,375	22,437
Clunes, Clunes	2,000	20 0 0	15 0 0	..	109,438
Catherine Reef, Sandh.	67,600	2 0 0	1 1 6	..	44,495
Confidence Extended, Sandhurst	30,000	1 0 0	0 2 4	..	9,750
Cornish, Sandhurst	800	40 0 0	13 0 0	..	11,800
Cornish, Daylfd.	13,000	5 0 0	1 5 6	975	975
Crown Cross Reek, Stawell	19,044	2 0 0	1 5 6	..	30,232
Doyle's Reef, Reedy Ck., Kilt.	24,000	0 5 0	0 2 6	..	15,600
Duchess of Edinb. Sandh.	24,000	0 5 0	0 0 11	..	15,000
Egerton, Egerton	25,000	4 0 0	3 15 0	..	276,660
Eastwood, Sandhurst	24,000	1 0 0	0 10 1	..	10,806
Ellenboro', Sandhurst	24,000	1 0 0	0 12 9	..	69,800
Ellesmere, Sandhurst	28,000	1 0 0	0 12 7	..	89,950
Extended Cross Reef,	11,220	2 10 0	..	..	96,211
Stawell	11,220	3 6 8	3 6 8		
Garibaldi, Sandhurst	28,000	1 0 0	..	..	36,100
Gt. Extend. Hust., Sandh.	28,000	1 0 0	0 17 6	..	363,300
Gt. Ext. Hust., 1 Trib. ,,	28,000	1 0 0	0 3 0	..	194,600
Great Southern, Sandhurst	34,000	2 0 0	0 5 0	..	8,975
Garden Gully Uni., Sandh.	33,517	1 0 0	0 12 11	3,351	778,041
Hercules & Energetic, Sandhurst	30,000	2 0 0	0 5 6	..	30,000
Johnson's Reef, Sandhurst	28,000	2 15 0	2 9 6	..	130,199
Johnson's Reef Ex. Sandh.	24,000	1 0 0	0 14 8	..	3,000
Lady Barkly, Sandhurst	24,000	1 0 0	0 12 9	2,400	24,715
Langridge, Kilmr.	24,000	0 5 0	0 2 9½	1,200	16,600
Lazarus Co., Sandhurst	45,000	1 10 0	1 1 0	..	51,750
Lazarus, No. 1, Sandhurst	45,000	1 10 0	1 1 6	..	75,375
La Belle, Sandhurst	24,150	1 0 0	0 8 6	..	1,207
Londonderry, Sandhurst	800	25 0 0	17 16 0	..	20,800
Long Tunnel, Wlhlla	2,400	5 0 0	5 0 0	2,400	858,000
Long Tunnel, Ext., Wlhlla	9,600	6 0 0	5 11 0	..	14,400
Napoleon Untd., Sandhst.	30,000	1 0 0	0 5 3	..	1,500
New Chum & Vic., ,,	25,000	1 0 0	0 10 0	..	43,125
New Chum Conso., ,,	28,000	0 10 0	..	1,400	90,300
New Chum Untd., ,,	29,500	0 10 0	..	737	12,537
New Era, Castlemaine	24,000	1 0 0	0 1 8	..	32,800
New Nth. Clunes, Clunes.	2,056	20 0 0	18 0 0	514	491,538
New St. Mungo, Sandh.	24,000	0 5 0	..	1,200	1,200
North Band & Barton, Ballarat	24,667	1 0 0	..	..	7,500
North Johnson's, Sandhst.	22,000	1 0 0	0 0 9	..	69,100
North Old Chum, ,,	27,000	1 0 0	0 12 0	..	63,175
North Shenandoah ,,	24,000	2 0 0	0 5 6	..	63,300
North Queen, Ballarat	12,000	0 10 0	0 8 9	..	1,200

QUARTZ—CONTINUED.

Name of Company.	No. of Shares.	Limit of Shares.	Amount paid up per Share.	Dividends Paid.	
				Since May 12.	Total.
New Koh-i-noor, Ballarat.	24,000	0 10 0	0 6 0	..	33,700
Old Chum, Sandhurst	27,000	2 0 0	0 8 0	..	59,062
Park, Sandhurst	40,000	0 10 0	0 0 9	..	10,400
Parker's United Gardens	20,000	1 0 0	0 16 11	..	21,500
Phœnix Company, Sandh.	24,000	0 12 0	0 5 3	..	8,500
Pleasant Ck. Cross Rf., Stawell	10,000	2 10 0	2 2 6	..	751,742
Princess Dagmar, Sandh..	24,000	1 0 0	0 8 4	..	10,200
Queen's Birthday, Dunlly	6,000	1 2 6	1 2 6	..	207,000
Queen's Black Hill, Balrt.	10,000	0 10 0	0 5 0	..	6,750
Rising Star, Daylfd.	14,400	0 6 0	0 1 3	720	18,165
Rose of Denmark, Sandh..	24,000	1 0 0	0 11 0	600	45,200
Sadowa, Sandhurst	32,000	1 0 0	0 7 9	..	8,800
Sergeant's, Ballarat	15,000	1 0 0	0 1 9	..	3,375
Shamrock Co., Sandhurst	30,000	1 0 0	0 17 0	..	9,750
Shenandoah ,,	32,000	1 0 0	0 17 6	..	32,800
Smith's Freehold, Ballrt..	24,000	1 10 0	0 1 6	..	7,700
South Clunes, Clunes	4,000	10 0 0	10 0 0	..	73,000
St. Mungo, Sandhurst	32,000	1 0 0	0 1 6	..	8,600
Sth.Catherine Reef,Sandh.	25,000	0 1 0	0 11 10	..	17,083
South Devonshire, ,,	24,000	..	..	10,800	..
United Devonshire ,,	28,000	1 0 0	0 15 11	6,300	28,200
Union, Amhrst	10,000	1 0 0	0 18 0	..	3,250
Washington, Ballarat	12,000	1 0 0	0 3 3	300	26,400
Wilson's Freehold, Ballrt.	12,000	0 10 0	0 1 6	..	3,450
U. Hustler's & Redan, Sandhurst	48,000	1 0 0	0 2 0	..	111,600
YoungBand Extend.,Balrt.	12,000	0 10 0	0 5 0	..	14,000
ALLUVIAL.					
Duke, Timor	25,000	£2 0 0	£0 8 0	..	£ 7,500
Dykes, Creswick	18,000	1 0 0	0 6 6	900	52,200
Hepburn Home Paddock, Creswick	6,000 12,000	2 0 0 2 0 0	1 0 0 0 3 6	..	17,550
Hobart Pasha, Beaufort..	10,000	0 10 0	0 7 9	500	12,500
Lone Hand, Creswick ..	12,000	1 10 0	1 5 6	1,500	44,100
Loughlin ,,	12,000	2 0 0	1 9 0	..	40,800
Madame Berry ,,	18,000	1 10 0	0 17 9	4,500	110,700
New Australasian, Creswick	10,000	2 0 0	1 2 6	1,000	68,750
New Discovery, Beaufort..	16,000	0 10 0	0 9 6	..	3,200
New Victoria ,,	1,200	2 0 0	2 0 0	420	17,100
Racecourse, Haddon	9,000	..	2 3 9	..	28,950
Reform, Haddon, 1st issue	2,000	4 0 0	4 0 0	..	..
,, 2nd ,,	2,000	2 0 0	2 0 0	..	42,000
,, 3rd ,,	4,000	1 10 0	0 5 0	..	..
Ristori, Creswick	12,000	1 0 0	0 11 1	3,600	165,400
Royal Saxon, Beaufort ..	12,000	0 15 0	0 10 0	900	4,500
Waterloo ,, ..	10,000	1 0 0	1 0 0	..	1,500
Working Miner's U. Home	20,000	5 0 0	..	..	29,000

TOTALS :—Quartz, £6,568,740; Alluvial, £645,650 = £7,214,390.

In the above list, which is greater than the list of home and foreign dividend mines as published in your Journal, I am acquainted with the position and history of the greater portion of the mines, and am thoroughly satisfied that not only will the output be considerably increased in many of them for years to come, but large sections of country capable of affording profitable employment for capital and labor is still awaiting development, and that English investors will do well to devote their energies to Australian mining investments.

THOMAS CORNISH, M.E.

NEW SOUTH WALES.

This colony possesses a vast extent of auriferous country, but the gold mining industry has not been prosecuted with the same energy as has been the case in Victoria. The approximate area of auriferous country is estimated at about 35,000 square miles, and the total production of gold about Forty Millions sterling (£40,000,000). It was in this colony, at Ophir, that gold was first discovered in Australia. The colony is intersected with numerous rivers, several of which contain large areas of auriferous deposits, notably the Shoalhaven Cudgegong, Turon, Macquarie, Mudgee, Abercombie, Meeroo, Lachlan, Darling, and Clarence rivers. Along the course of some of these rivers I have inspected immense tracts of rich alluvial deposits, but, for want of machinery and water for sluicing, it cannot be worked to advantage. In one place I found payable washdirt to exist for about 20 miles in length, by a great breadth and depth, capable of affording profitable employment to thousands of miners for many years by the judicious outlay of a moderate capital in bringing a plentiful supply of water for sluicing, and the erection of machinery for crushing purposes. It would be difficult to form an estimate of the vast quantity of matrix available for immediate operations on this special tract of country; but, without doubt, it is the ancient river-bed or water course, which at one time drained a large portion of the south-eastern water shed of the colony. This alluvial deposit lies from 500 feet to 1,000 feet above the level of the present river. It runs parallel with the Shoalhaven River, and extends for many miles above and below the tract of country I prospected, and which, I believe, will prove to be a rich gold field when effectually worked. At the Kiandra gold fields there has been discovered an immense area of alluvial deposits with great depth of washdirt; but this, like many other rich districts, only wants a judicious expenditure of capital in the construction of reproductive works, such as water races, reservoirs, &c.

Within the vast area of auriferous country of New South Wales there are only 9,215 gold miners, and from that number 1,372 are Chinese. 1,343 square miles of ground have been worked on, 416 quartz reefs discovered, and the machinery employed is valued at £297,585.

The following table shows approximately the number of miners and the quantity of alluvial and quartz gold won in the colony of New South Wales during 1882:—

DISTRICT.	NO. OF MINERS.	QUANTITY OF GOLD WON.						TOTAL.		
		ALLUVIAL.			QUARTZ.					
		Ozs.	Dwts.	Grs.	Ozs.	Dwts.	Grs.	Ozs.	Dwts.	Grs
Peel & Uralla	767	3,942	19	13	6,835	2	10	10,778	1	23
Mudgee ……	869	11,445	16	14	250	0	0	11,695	16	14
Bathurst*……	704	2,174	15	1	5,875	7	20	16,526	12	18
Lachlan……..	2,192	35,916	4	18	3,856	1	15	39,772	6	9
Tumut and Adelong …	751	9,022	3	15	9,408	18	2	18,431	1	17
Southern ……	1,359	14,786	15	5	1,406	19	6	16,193	14	11
Clarence and Richmond ..	65	90	16	0	909	0	1	999	16	1
New England	190	1,240	12	15	413	10	0	1,654	2	15
Tambaroora and Turon ..	1,050	8,365	8	8	3,420	6	3	11,785	14	11
Albert ………	880	4,350	0	0	…	…		4,350	0	0
Hunter and Macleay …	388	188	0	0	8,093	14	21	8,281	14	21
	9,215	91,523	11	17	40,451	0	6	140,469	1	20

The following table shows the results obtained from some parcels of alluvium during the year. The quantity in respect of which particulars have been obtained is very small, but the average yield is high. It is much to be regretted that the want of system, and other circumstances connected with the mode of working our alluvial deposits, renders it very difficult to obtain from the mine owners more ample details for the purpose of comparison, on a large scale.

Statement of average yields from alluvial mines for 1882 :—

---

*In the returns from this district the yields of gold from the Carcoar division 6,599 ozs. 4 dwts. 2 grs., and from Bathurst 1,895 ozs. 5 dwts. 19 grs. are only placed in the column of totals. This gold will, no doubt, be mostly from the dyke, or extraordinary deposit at Brown's Creek.

DISTRICT.	QUANTITY.	AVERAGE PER TON.			YIELD OF GOLD.		
	Tons.	Ozs.	Dwts.	Grs.	Ozs.	Cwt.	Grs.
Bathurst...............	15,840	0	4	11·71	3,565	0	23
Lachlan	8,326	0	5	2·23	2,120	5	10
Southern	5,500	0	1	8·49	372	7	12
Tumut and Adelong	5,000	0	8	9·60	2,100	0	0
Peel and Uralla	4,055	0	2	15·94	540	4	14
Albert	1,462	0	15	21·22	1,161	2	21
Totals...	40,183	0	4	21·77	9,859	1	8

From quartz mines the returns this year have been more full, and show a very satisfactory average, namely: 19 dwts. 13·88 grs., or nearly 1 oz. per ton.

Statement of average yields from quartz mines for 1882:—

DISTRICT.	QUANTITY.		AVERAGE PER TON.			YIELD OF GOLD.		
	Tons.	Cwt.	Ozs.	Cwts.	Grs.	Ozs.	Dwts.	Grs.
Bathurst.........	5,371	0	1	0	18·44	5,577	8	4
Tambaroora and Turon ...	1,604	0	1	7	12·84	2,208	6	15
Mudgee	287	10	1	3	13·56	338	15	0
Lachlan	7,198	0	0	10	20·94	3,913	0	5
Southern	3,044	0	0	7	16·36	1,169	3	6
Tumut and Adelong	9,520	0	0	19	14·76	9,336	15	14
Peel and Uralla	1,832	0	1	6	9·83	2,419	2	10
Hunter and Macleay	4,514	0	1	15	12·87	8,020	10	21
Clarence and Richmond ...	1,251	10	0	14	12·63	909	0	1
Totals...	34,622	0	0	19	13·88	33,892	2	4

With the excellent average yield of gold from quartz, it is surprising that there is not more energy displayed in quartz mining in this colony, the small number of miners engaged are wholly inadequate to do justice to the vast resources of New South Wales in developing its gold mining industry. The rising youths of the colony are not of the enterprising class which caused the development of the gold fields in the early days that created the wealth of their fathers which they now enjoy. If more attention was paid to the mining industry by the colonists, they would be rewarded with results of a satisfactory nature; but, the industry has been sadly neglected, and treated with indifference by the Government and the public generally, a few periodical fits of excitement have occasionally drawn a small section of the population to speculate in mining, but few have gone into it as a business enterprise. Owners of private property have thwarted the progress of mining very much by imposing restrictions of a nature that often militate against successful operations and prevent prospecting. Large sections of auriferous country have been virtually locked up from mining operations that might have been developed with profit and advantage to the owners and miners.

The want of a Mining on Private Property Act of Parliament that would afford greater facilities for developing gold mining has been much felt in New South Wales and Victoria.

Some years since a Royal Commission was established to inquire into the gold mining prospects; they visited the various gold fields, and examined witnesses wherever they went. In their report to the Government they say :—" A very strong impression exists in our minds, as a result of this examination, that the resources of New South Wales, both in its auriferous treasures and its other mineral riches, have been much underrated and undervalued. As regards the gold mines, we have seen a great many old and partially abandoned fields in which it is evident vast quantities of gold yet remain to be unearthed. The individual miner, working chiefly as he has hitherto, merely with his pick and shovel, has, no doubt, exhausted the ground of nearly all the gold that, by the aid of only such appliances, he could extract; but there yet remains on such old diggings a vast field for enterprise when miners can be assisted by associated capital and by efficient machinery. Very wet ground, both alluvial and quartz, as also surface hills and beds of rivers and creeks, are to be found in great numbers of places, which although known to be payable, and indeed, much of it known to be rich, remain at the present time undeveloped and unworked. The reason of this is chiefly that the individual miner, however suitable he may be to prospect, and in many instances to efficiently develop, new auriferous ground, has not generally the means for those extensive undertakings and works required to extract the precious metal in payable quantities, where the ground on which he operates has been previously worked, and the cream, so to speak, taken from it. The introduction on old or partially worked ground of costly pumping machinery to keep wet claims dry, extensive races or water courses to bring to said ground, and machinery for hauling and crushing and puddling, would, in a great number of instances, if available to the practical miner, vastly tend to increase our national wealth, and give employment to a greatly increased population. From the rough and imperfect mode in which the gold mines of the country have hitherto been worked (partially attributable to new rushes taking the miners away from their claims before they had been thoroughly tried, and partly to the want at the time of the knowledge of mining, and the absence of proper appliances), there are great quantities of old workings which will, we believe, yield a rich harvest when the capitalist can be enticed to lend his helping hand to their development.

"In what may be termed new, or unprospected ground, our observations induce to the belief that a very large field for enterprise and the use of capital also exists. Gold mining on a large scale may really be said to be only just commencing in New South Wales, more particularly the branch of it known as quartz mining. There appears to have been, and indeed to be now, to some extent, an idea that gold mining must, from its very nature, be merely ephemeral; that, unlike other occupations, and indeed, other kinds of mining, gold digging cannot last for any length of time. The shallow and easily worked diggings, discovered in the early days of the gold discovery, greatly induced this belief, and did much to retard the advancement of the gold mining interest. Of late, however, deep alluvial leads and rich quartz reefs have come to be worked, which are fast leading to the impression that very many gold mines will, like tin and copper mines, be worked for many years—it may be for centuries. The idea that quartz reefs ceased to be auriferous at a hundred feet or two beneath the surface is quite exploded.

"Many auriferous regions, literally covered with auriferous quartz reefs, not rich enough it may be on the surface to tempt the individual miner or the promoters of mining companies to work them under the present state of things, but which are yet, many of them, destined, we believe, to yield remunerative occupation to a large population and employment to much capital.

"It is the opinion of many competent witnesses who came before us that there are immense tracts of country in the colony which have every indication of being auriferous, but which have as yet not been at all prospected. We concur in the view which is prevalent amongst the gold miners, that it is highly probable that rich and extensive gold fields will be discovered for many years to come, and the few diggings hitherto worked are but a very small part of the gold mines which are destined to enrich the people of this country."

The reports of the Under Secretary of Mines, the Inspectors of Mines and Wardens of Gold Fields, are for the most part of an encouraging nature, showing that the colony possesses vast resources of auriferous wealth, which requires but a better organisation of capital and labor, under intelligent supervision, to give more satisfactory results from their development.

The yield of gold from the Temora gold field shows a large increase upon the previous year. The continuation of the deep lead has not been sought for in a systematic manner. The Inspector of Mines says there is a large area of auriferous country which has not been prospected, from which new discoveries are likely to be made.

In the Bathurst district the extraordinary deposit at Brown's Creek, which is now 70 feet wide, is still being profitably worked, the output being 300 ounces per month. The Flat Reef, at Belabula, from 2 to 10 feet wide, is so favorably situated that it is believed 1 dwt. per ton will pay when in full work, every arrangement for labor-saving having been made. At Lucknow the Reform Company is working the Pyritous lode, which averages 2 feet, has a foot wall of diorite, and a hanging wall of serpentine, and is proved rich in gold.

From the report on the Forest Reef gold fields, it is said:—"The ancient valley or deep ground, as indicated by the outcrops of slate and diorite through the ba-salt, crosses Brown's Creek near the south-west corner of Graham's, and passes in the direction of the Forest Reefs. Several leads are trending under the tableland and likely to prove of great value."

In the Tambaroora and Turon district many small parties of miners are working with success, earning from £2 to £7 per week per man, while the Hawkin's Hill Consolidated is doing good prospecting. Quartz reefs, showing stone of exceptional value, have been discovered in the vicinity of the Bogan. To the south and west of Tomingly other discoveries have been made. Remarkably rich veins have been discovered at Ten-Mile Ridges; gold has been discovered at the Springs Railway Station.

In the Lachlan district, the Mudgee district, and Tumut and Adelong districts, valuable discoveries have been made, and the prospects are improving.

The reports of the various other mining districts all tell of the large resources at command, awaiting capital and labor for development.

"A careful review of the prospects of our gold fields, as gathered from the Reports furnished by the Inspector of Mines, Wardens, and Mining Registrars, shows that the decrease in the output of gold for the year is mainly, if not wholly, due to the drought, and there are evidences of an improvement in the character of the works on many of the older fields, which may be due to the recognition of the fact that some of our auriferous deposits cannot be developed or profitably worked without the aid of proper appliances and the adoption of system in the conduct of the necessary operations, which, if persevered in, will doubtless lead to an increased yield of gold, and the working of large tracts of country now lying idle."

If the capitalists of New South Wales will but take a little more interest in the development of their gold mines, and infuse some extra energy in the industry, they can soon increase the output from their mines, and materially raise the supply of gold. From the districts now opened and partially developed, with efficient machinery and appliances there ought to be not less than 50,000 gold miners at work, whose returns would be from £5,000,000 to £10,000,000 annually.

QUEENSLAND.

The gold discoveries of this colony were made several years later than those of New South Wales and Victoria, but they have proved wonderfully rich and profitable. Some of the alluvial workings have been very rich, and the auriferous quartz reefs discovered extend over a vast area of country.

The population of the gold fields have varied considerably with the successes of the alluvial workings, which for some time were literally overrun with Chinese. In the year 1882 the population is given—3,809 European miners, and 1,926 Chinese. The export of gold for the year is given as 230,090 ozs.—value £829,655, or at the rate of £144 13s. per man, including Chinese. On the Charters Towers gold field, which may be termed the largest and most prosperous gold field in Queensland, the returns are given at 79,495 ozs. of gold, which at £4 per oz. would give, say £317,980, and as there are only 1,280 miners on the field, this gives the large yield of nearly £250 per man employed in the mines, a large proportion of whom would be prospecting.

Gold has been discovered at various points along the ranges, from lat. 28½° south, to 12° south, and from 140° to 153° east, or about 1,000 miles in length by 800 miles in width.

The Palmer gold field, discovered a few years ago, is in about 15° or 16° south latitude, and extends over a large area of country. The heat is tropical, but gold is plentiful. As an instance of the extreme richness of some of the reefs, 58 tons of quartz gave 6,469 ozs. of gold, or over 111 ozs. per ton. The Hodgkinson gold field may be termed a southern continuation of the Palmer gold field. This is another extensive field and very rich, the average yields having been in some years as high as 2 ozs. 5 dwts. per ton. The reefs from Mount Mulligan extend 46 miles in length by about four miles in breadth, the reefs averaging a great thickness.

The Etheridge, the Normanby, and the Gilbert are also extensive fields in the northern parts of Queensland. The reefs are plentiful and rich, but in consequence of want of efficient machinery and labour, crushing is expensive.

The Cloncurry is a long way inland, on the north side of the McKinlay range, and is 180 miles from a gulf port; gold and copper are plentiful.

The Ravenswood is an extensive field, containing a large quantity of quartz reefs of good average richness, which offers a fine field for the profitable investment of capital in supplying machinery.

Gympie, the chief of the southern gold fields, keeps up its reputation for good yields of gold, and although the average for 1882 of 1 oz. 2 dwt. 10 grs. is not so high as in former years, yet it may be considered a very fair and excellent yield.

The total production of the Queensland gold fields may be taken at about £15,000,000 sterling, and the future prosperity of the colony as a producer of gold may be safely assured. The enormous area of auriferous country opened up during the last few years in this colony shows plainly that with efficient machinery, a good water supply, and more population, Queensland will, in all probability, prove the richest and most productive of the Australian gold fields.

The gold supply from Queensland, as also from the northern territory and other tropical portions of Australia must, in a measure, be regulated by the labor question. Where the climate is too hot for European labor to be profitably employed, recourse must be had to other labor, which will naturally bring up the Chinese labor question. After the discovery of the rich alluvial gold fields in the north of Queensland there was a considerable influx of Chinese, who overrun the shallow alluvial workings, to the great loss of the European discoverers.

The Government passed a law imposing a poll tax of £10 per head for their admission to the colony, and £3 a year for miners' rights, and business licenses £10 annually. This arbitrary and questionable method of dealing with the influx of Chinese was not creditable to the liberality or practical judgment of the Queensland Government. At the time the matter was under discussion I suggested a method of dealing with the Chinese influx in a way that would have been more advantageous to the European miners and the colonies as well. My proposal was, that as the tropical heat is too great for the European miner to work with advantage in northern Queensland, they should be allowed to hold larger areas of land for mining claims, and utilize Chinese labor for working them either on wages, tribute, or royalties.

Hordes of alien Chinamen should not have been allowed to overrun the best gold fields discovered by the enterprise of Australian gold miners, and ultimately excluding them from the advantages of their own discoveries. No alien Chinese should have been allowed to take up or hold mining claims until they had been say, five to ten years on the gold fields, and become naturalized citizens.

By this manner the northern gold fields of Queensland would not have been inundated by such a large influx of these (not altogether desirable) colonists, to the injury of the enterprising miners who discovered and developed the auriferous resources of the country. But their labor might have been utilized and directed by and under the skilled supervision of those to whose energy and experience these valuable discoveries were made known.

The utilizing of Chinese labor under the direction of Australian mining engineers for the more practical and economical development of the gold fields in northern Queensland, and also in the northern territory, will be a feature in the future mining industry of these colonies that will have a marked effect upon the output of gold. It is useless to keep large tracts of auriferous country idle for want of labour to work the mines, when thousands of Chinamen could be got to work them on tribute or wages for the owners. If the owners of mines were allowed the privilege, and adopted the plan of introducing Chinese labor, on tribute or wages, for the more extended working of the numerous quartz reefs now proved payable, they would reap the advantage of the increased output of gold.

A judicious combination of capital for supplying efficient machinery, water, and appliances, for economical gold mining, and the organisation and intelligent direction of Chinese labor on a large scale will be the readiest, the most practical, and the most profitable mode of working the gold mines of northern Queensland and other tropical parts of Australia.

The small number of Australian miners, less than 4,000, now working the Queensland gold mines could, in my opinion, utilize and direct the labor of ten times their number of Chinese, or in other words, might have working for them, say 40,000 Chinamen, whose labor would, if properly directed, produce not less than ½ oz. of gold per man per week, or say an annual output of £4,000,000 sterling, and probably a great deal more. Where the Australian miners hold possession of the mines, and supplied the machinery for working, and superintended the working operations, they would, in most cases of tribute, get from 25 to 50 per cent. of the gross yield, or if employing the Chinese on wages, would make a similar ratio of profit.

I well know there is a feeling of prejudice existing against employing Chinese in mining, or allowing them to hold mining claims; but when it comes to a question of letting valuable auriferous districts lie unutilized for want of labor, it becomes a matter of common sense and immediate profitable results as against an absurd prejudice of utilizing the labor of Chinamen for gold mining.

For instance, supposing four miners are working a mine as partners, and presuming they have spent a year in sinking or prospecting the reef, and having discovered a fairly payable mine, the result of their united labor may be, say, 8 ozs. of gold per week, or say, at the rate of 2 ozs. per man, at 80/-, equal to £8, less expenses. Now, if these four miners, instead of wasting their energies in working in the mine themselves, in a temperature wholly unsuited to them, were to arrange with forty Chinamen to work their mine, either on a basis of tribute or wages, the results may be anticipated as follows :—Allowing the labor of two Chinamen as equivalent to one skilled Australian gold miner, the forty Chinese would, working under the guidance of the four partners, say, divided in three shifts of eight hours each, produce, say, 40 ozs. of gold weekly equal, say, £160. Now, supposing the Chinese were working for half the gross yield, they would be getting £2 per week per man for their labor, while the four partners would be getting £20 per man, less expenses of timber, tools, powder, crushing, &c., which would most likely be taken from the gross yield, for the easy work of superintendence instead of £8 per week for laborious toil in a hot climate. The mine would be worked more expeditiously, and the profits realized more quickly than by dawdling over it for years with the labor of four men only. Or supposing the mine worked on wages, which could be fairly averaged at £1 10s. per week for Chinamen, it would show a good result as follows:—

40 Chinese miners raise 50 tons quartz at 1 oz. per ton		£200 0 0
Cost of labor at £1 10s. per week per man	£60 0 0	
Cost of carting and crushing quartz, at 10s.	25 0 0	
Timber, powder, tools, candles, &c., say	10 0 0	
		95 0 0
Weekly profit to the four owners		£105 0 0

But with a fair sized reef, and moderately well opened out, 40 Chinese miners ought to raise a good deal more than that, say—

100 tons per week, at 15 dwts. per ton, 75 oz. gold		£300 0 0
Wages for 40 men, say	£60 0 0	
Carting and crushing, quartz, at 10s. per ton	50 0 0	
Other expenses, say	20 0 0	
		130 0 0
Weekly profit to the four proprietors		£170 0 0

The average of the yields I have taken as an estimate is much below the general results of the colony, and the quantity of quartz mentioned would be a low output for such a number of men working on a moderate supply of stone.

The lowest average of any gold field in Queensland is the Ravenswood, which from crushings of 7,854 tons of quartz in 1882, gave 5,002 oz. of gold, or an average of 12 dwts. 17 grs. per ton. On this field are 90 distinct quartz reefs, proved to be auriferous, and the extent of alluvial and quartz ground worked upon about 30 square miles. On this large number of reefs and extensive area of auriferous country there are only 180 quartz miners, and 70 miners working on alluvial; or only two miners for each quartz reef in the district. To give some idea of the room there is for increased population on this gold field, three or four quartz mines, fairly well opened out, would employ the whole of the miners on the field. A few years since, I find by returns, that from this gold field in two years was crushed 120,000 tons of quartz, which averaged about 1 oz. per ton.

I will further illustrate the advantage of utilizing Chinese labor on this gold field by taking an average yield of only ½ oz. per ton.

Thus 40 Chinese miners raise 100 tons per week, at ½ oz. per ton		£200 0 0
Deduct cost of crushing, carting, &c	£50 0 0	
Other expenses, such as timber, tools, powder, candles, &c., &c.	20 0 0	
		70 0 0
		£130 0 0

Allowing the Chinese 50 per cent. as a tribute, their proportion would be more than full wages of £1 10s. per week per man, say	£65 0 0	
While the remaining 50 per cent. would be for the mine owners	65 0 0	
		£130 0 0

Thus showing that on a lower average yield per ton of quartz than has ever been obtained on any gold field in Queensland, by a judicious combination of capital and skill, and the organization and intelligent direction of Chinese labor, that quartz reefs, averaging only ½ oz. of gold per ton, can be worked to great profit and advantage, and that the Australian miners can make twice as much money by the easy occupation of directing the labor of Chinamen than he could by his own laborious work in a hot climate.

What can be done by individuals can also be done by Joint-Stock Companies or Associations, formed for a similar object, and it is in the organization and direction of such associations for the object of legitimate gold mining that the gold supply from Queensland can not only be largely increased, but permanently maintained.

I say it advisedly, and as the result of experience and investigation, that there is no other form of industry or business which offers such a certainty of direct, permanent and increasing profits, as from capital judiciously invested in supplying machinery and appliances for the development of gold mining, and the Australian colonies generally, and Queensland especially, offer many advantages, where the principle can be applied with the most satisfactory results.

My object in advocating the employment of Chinese labor in developing the mines in northern Queensland and other hot parts of the colonies where European labor cannot be obtained or utilized to advantage, is that those who have borne the brunt of prospecting and developing the reefs so far should reap the benefit of the profits to be derived by a more efficient and systematic working — that the time of the skilled Australian quartz miner would be of greater value in directing and superintending the labor of a number of Chinese, and showing them how to work, than by his own manual labor. From the large number of quartz reefs now proved to be highly auriferous, and the vast area of country already prospected, there is ample room for the profitable employment of a large number of miners, and it is far preferable that the mines should be developed and the gold produced by the aid of Chinese labor for the present generation, than that the gold should lie in the reefs without the opportunity of its benefits being disseminated throughout the community, merely because a prejudice exists against the employment of an alien race.

I think if intelligent consideration be given to this question, that it would be conceded that it must be better for the interests of the Queensland colonists and English capitalists, merchants, traders, and manufacturers, that the gold supply of that colony should be increased to four or five millions sterling annually, than that the mining industry should drag on a slow existence by merely affording employment to about 4,000 miners, when the labor of from 40,000 to 50,000 more might be profitably utilized.

I give expression to my views on this question as an old Australian miner of considerable experience, and in the interests of Australian gold miners as a class, with a knowledge of the results and requirements of the industry, believing that the time has arrived when the mining community should individually derive greater profits from the production of gold than they have hitherto done, and that the whole question of the development of the great mineral resources of the colonies should receive more intelligent consideration at the hands of the miners than has hitherto been given to it.

The Legislature has taken care to foster other industries by the introduction of cheap labor for working of stations and sugar plantations, &c., by the agency of which the owners are acquiring great wealth. Then why should not the producers of gold have similar opportunities afforded them of participating in the great wealth of the country, by being allowed to hold fair-sized areas of mineral land for claims, on moderate terms, on which they could settle down with security, and utilize the cheap labor of the Chinese, who make good miners, by employing them either on tribute or wages, as they may choose ?

By this plan the gold miners, who have been the great producers of solid wealth in gold for the benefit of others more than themselves, would be enabled to enter into gold mining with hopes and prospects of becoming, as they deserve, wealthy and prosperous settlers and owners of property, that would increase in value as development went on.

The Queensland Government should pay more special attention to the development of their mineral resources, by aiding or carrying out reproductive works for that object, such as conserving water, and making railways to the gold fields, where the prospects are such as warrant good returns. Thus, a gold field, like Charters Towers should have had a railway made to it years ago. What makes mining progress so rapidly in America is the enterprise of railway companies, who follow up the miners as soon as a new field is discovered, with encouraging results, by building a railway and affording easy communication.

When a gold field has been satisfactorily prospected by crushing of large quantities of quartz from numerous reefs, which, by sinking on, are proved to be permanent lodes, and of a character likely to be remunerative, it then becomes the duty of a government to devise, or assist in devising and carrying out public works, such as railways and water supply, for the more economical development of the resources of the country.

Had the Queensland Governments given more attention to this on the discovery and opening of the rich gold fields, especially in the quartz-reefing districts, by the construction of cheap, light lines of railway, they would not only have reduced the cost of carriage of goods and machinery to the gold fields, and induced a large population to settle on them, but by the cheap and expeditious transit of machinery many more mines would have been opened, larger quantities of quartz would have been crushed, and an immense increase in the output of gold would have been the result—which would have benefited the whole colony by opening up avenues for other industries, to absorb a large and increasing population, which would flow to the shores of the colony from all parts of the world, causing a proportionate increase to the imports and exports, as also to the revenue; stimulating the increase of the manufacturing industries of Great Britain, and materially augmenting the various interests represented under the heads of finance, trade, commerce, and industries.

POPULATION ON THE GOLD FIELDS.

Return of the estimated population on the several gold fields of the colony on 31st December, 1882:—

DISTRICT.	NAME OF GOLD FIELD.	EUROPEANS.						CHINESE.			
		Miners employed in Quartz Reefing.	Alluvial Miners.	Carters, Timber Getters, Attendants on Machines, &c.	Merchants, Tradesmen, &c.	Women and Children.	Total business population.	Miners.	Engaged in other occupations.	Total Chinese population.	Estimated total population.
NORTHERN.	Palmer	101	6	39	51	137	334	1,330	332	1,662	1,996
	Mulgrave	15	..	3	2	2	22	..	..	..	22
	Hodgkinson ..	199	20	56	48	317	640	8	280	288	928
	Etheridge & Gilberton	250	10	45	30	130	465	300	100	403	865
	Charters Towers and Cape River	1,250	30	800	550	3,460	6,090	20	300	320	6,410
	Cloncurry ..	14	30	5	10	37	96	..	15	15	111
	Ravenswood and Strathalbyn ..	180	70	50	100	500	900	160	140	300	1,200
	Woolgar	50	5	20	10	6	91	50	10	60	151
CENTRAL.	Peak Downs ..	17	147	7	7	25	197	39	4	63	240
	Rockhampton ..	95	52	3	6	144	300	8	2	10	310
	Nebo (Mt. Britton)	40	10	10	20	25	105	..	1	1	106
	Normanby, &c. ..	30	4	4	..	10	44	..	..	..	44
	Gympie and Kilkivan	1,172	11	300	500	3,500	5,483	11	86	97	5,580
	Enoggera	5	..	9	..	1	15	..	..	..	15
	TOTALS	3,418	391	1,351	1,328	8,294	14,782	1,926	1,270	3,196	17,978

AVERAGE YIELD OF AURIFEROUS QUARTZ.

Return showing average yield per ton of auriferous quartz crushed on the several gold fields during the year 1882:—

GOLD FIELD.	NO. OF TONS CRUSHED.	GROSS YIELD.	AVERAGE PER TON.		
		Ozs.	Ozs.	Dwt.	Grs.
Palmer	2,704	4,247	1	11	9
Hodgkinson	9,969	11,567	1	3	5
Mulgrave	442	446	1	0	4
Etheridge	7,428	13,190	1	15	12
Cloncurry	410	453	1	5	9
Charters Towers ...	45,662	79,495	1	14	9
Ravenswood	7,854	5,002	0	12	17
Clermont District ...	1,211	842	0	13	17
Nebo	627	2,779	4	8	15
Gympie	44,720	50,162	1	2	10
Warwick	648	648	1	0	0
Tenningering ...	889	622	0	14	0
Rockhampton ...	1,092	2,106	1	18	14
	123,656	171,559	1	7	18

Showing a general average of 1 oz. 7 dwts. 18 grs. per ton.

The number of steam engines employed on the gold fields for winding, pumping, and crushing is 199, with an aggregate horse-power of 2,282.

QUARTZ REEFS AND EXTENT OF GOLD WORKINGS.

Table showing the number of quartz reefs proved to be auriferous, and the extent of alluvial and quartz ground worked upon on the several gold fields of the colony:—

Division.	Name of Gold Field.	Number of distinct Quartz Reefs proved to be Auriferous.	Extent of Alluvial and Quartz Ground Worked upon.
			Square Miles.
Northern	Palmer	126	2,000
	Etheridge	131	2,000
	Hodgkinson and Mulgrave	370	580
	Cloncurry	2	Not given.
	Charters Towers and Cape River	453	500
	Ravenswood and Strathelbyn	90	30
	Woolgar	30	300
Central	Peak Downs	30	45
	Rockhampton	25	Not stated.
	Nebo	15	4
Southern	Normanby	5	7
	Gympie	80	25
	Enoggera	2	64
	Totals	1,359	5,555

NEW ZEALAND.

Gold was discovered, says Dr. Hector, C.M.G., F.R.S., in his "Handbook," in 1842, but was not practically worked till 1852, when the mines at Coromandel first attracted attention to the district of Cape Colville Peninsula, which still forms the chief centre of true lode-mining operations in New Zealand. The yield from these mines was up to 1880 over four-and-a-half millions sterling, but is small when compared with the quantity of alluvial gold obtained in the South Island subsequent to 1861.

QUARTZ MINING.

The principal quartz mines in the North are in the Coromandel and Thames districts, about thirty miles apart. In these localities the reefs have been proved to a depth of over 600 ft. below sea-level, but the best mines have as yet been principally confined to the decomposed and comparatively superficial rock. Veins have been discovered and gold obtained at all levels on the ranges from sea-level to an altitude of 2,000 ft. The quantity of gold that has been obtained from some of these quartz reefs is very great, and for considerable distances the quartz has yielded very uniformly at the amazing rate of 600 ozs. to the ton,—such reefs are, however, very exceptional in New Zealand, as elsewhere. The value of such a yield may be better estimated by those not conversant with the subject, when it is stated that ½ oz. to the ton is in most cases a profitable return.

Auriferous reefs are also extensively worked in the Schistose rocks of Otago, and they occur at all altitudes, from sea-level to the height of 7,400 ft., the most elevated gold mine in the Australasian colonies being that opened during the year 1878 on the summit of Advance Peak, near Wakitipu lake.

Several promising reefs have also been found in the Westland gold fields, amongst which may be mentioned a reef of auriferous stibnite at Langdon's Creek, near Greymouth, which yields from a few ozs. to 99 ozs. of gold per ton, but, up to the present time, these reefs have not received the attention they deserve, except at Reefton and a few other localities.

ALLUVIAL MINING.

Alluvial gold is chiefly found in the South Island, in the districts of Otago, Westland and Nelson, in which mining operations are carried on over an area of 20,000 square miles.

The auriferous sand, or gold drift, as it is usually termed, is of three distinct kinds:—

Firstly.—That which is found in the beds of rivers, and which is worked by small parties of miners, as the process requires no large expenditure of capital to effect the separation of the gold.

Secondly.—Immensely thick deposits of gravel of more ancient date occupy the wider valleys and the flat country, from which the gold can only be obtained by means of considerable expenditure and large engineering works for the purpose of bringing a supply of water for undermining and working the auriferous deposits. This description of mining is of a more permanent character than the former, and provision has been made by the Colonial Government for assisting the miners by the construction of water-races, which will supply the means of profitable employment to a much larger number of persons than at present gain a living by it.

Some of these deposits are of considerable age, the cements of Tuapeka being certainly not younger than the lowest Tertiary deposits, being crushed and washed in the same manner that a quartz reef is worked. The nature of the deposit consists of coarse gravels and silts cemented together, carrying varying quantities of gold, and were first found at the Blue Spur in Otago, and subsequently at a number of other places in the same district.

At Charleston also, and elsewhere on the west coast, auriferous cements are worked, but the localities first cited are those which to the present time have received the greatest attention.

The yield of gold from these cement claims is small, but, in consequence of the large amount of material which can be operated upon, the value of the deposits is considerable, and their extent guarantees that they will afford a remunerative return for some time to come.

Thirdly.—Along the sea-coast the continued wash of the waves produces a shifting action on the sands, which are brought down by the river and drifted along the shore, thus producing fine deposits of gold, the extraction of which, by the aid of simple mechanical contrivances, affords employment to a large number of diggers, who can labor without incurring the hardships and privations which attend the occupations of miners in the more inland districts.

The alluvial diggings at Collingwood were discovered in 1858, those of Otago in 1861, and in 1864 the gold fields near Hokitika proved a great attraction to the mining population of New Zealand. In Otago the gold drifts rest on the denuded surface of their parent rocks. The auriferous gravels in the western district on the other hand, as a general rule, rest on the surface of Tertiary rocks of marine origin, and they have a general distribution parallel to whatever was the western shore of the island at the time of their deposits.

The richest alluvial diggings in Westland usually occur in places very inaccessible for water supply, the streams having cut their channels much below the surface of the country, so that an organized system of irrigation is necessary to obtain the required amount of water for the gold washing.

Yield of Gold (from returns to government).

There are no means of ascertaining accurately the yield of gold for any period, because the miners who find the gold, and the bankers to whom they sell the greater portion, are both alike reticent as to the quantities which pass. The Custom House returns of the export are the only means available for arriving at an approximation of the quantity. These returns, of course, take no account of what is used up by jewellers in the colony, nor of what may be taken away without paying duty.

Although the yield of gold for 1882 is considerably less than the previous year, it is believed the decrease is only temporary, and the increased interest taken by the Government in supporting mining by the construction of roads, water races, sludge channels and other works likely to be of a reproductive nature, as also the increasing interest taken by investors in developing the auriferous resources of the country and its improving prospects, that there may for the future be fairly anticipated a material increase of the gold supply from New Zealand.

Yield of gold during the year ending March 31st, 1883:—

	Ozs.	VALUE.
June Quarter ... (1882)...	40,944	£164,253
September Quarter ,, ...	74,776	298,445
December Quarter ,, ...	62,175	248,060
March Quarter (1883) ...	70,967	283,797
	248,862	£994,555

The total value of gold exported up to 30th June, 1883, is £39,958,145. The number of miners following gold mining on the 31st March, 1883, is given as 14,523, which gives the average earnings only at about £69 per man, it must be explained, as in former reports, that many persons returned as miners are only engaged for a portion of the year in that occupation, and are farmers or settlers as well.

Quartz mining is tardy of development in New Zealand; a few mines in each of the principal districts of Thames, Reefton, and Otago continue to do well; but a much greater number at each of these places are either in the preliminary stage of prospecting the lodes, or of exploring for fresh lodes in mines already well opened out. At Thames and Coromandel paying auriferous stone is found at depths of 600 ft. and 700 ft. below sea level, thereby disproving the pre-conceived opinion that paying quartz was not likely to be found deep down. A good deal of preliminary work towards opening out mines has been done at Te Ahroa, Reefton, Terawhiti, which it is hoped may tell in the returns of future years. The reports show that of 66 mines in the Reefton district, only three, or more properly speaking, only two, the Welcome and Keep-it-Dark, paid dividends during the year, while the other 64 made calls to the amount of £61,345. There is every reason for hoping that this large outlay will be recouped manifold to the shareholders when once the mines are opened out. The auriferous nature of stone is often well assured, and yet a company fails to develop the mine simply from want of capital. It is a true saying "that it takes a miner to make a mine," and the history of the dividend-paying mines attests this in almost every case; success being only attained through preserving well directed efforts in testing and opening out the ground.

The results for the year are as follows :—

DISTRICT.	GOLD FIELD.	TONS OF QUARTZ CRUSHED.	YIELD IN OZS. OF GOLD.
Auckland	Coromandel	2,907	7,577
	Thames	25,867	43,311
West Coast	Reefton	18,928	19,194
	Lyell	7,277	3,949
Otago	Cromwell	2,900	2,400
	Arrow	3,000	3,291
	Skipper's	2,153	1,379
	Rees River	1,350	326
		64,382	81,427
From Quartz and Cement	Lawrence	... ...	6,371
			87,798

Or making an excellent average of 1¼ oz. of gold per ton of all the quartz crushed for the year.

ALLUVIAL MINING.

This class of mining has always been the most prolific source of gold in New Zealand, and it still continues to yield fully two-thirds of the supply, as in former years. The days when the auriferous gravels were on the surface of the river beaches, and channels, ready and waiting long to yield their rich treasures to the digger, with his shovel, tin dish, and cradle, are now a tradition of the past. But Nature's resources are far from being exhausted. The alluvial miner finds the reward of his toil and his many ingenious devices in gathering up the precious metal, long hid under the accumulation of untold ages, in the ancient river beds, now high above the present levels, as at Kumara, along the flank of the great ranges, as at St. Bathan's, Dunstan Mountains ; at all levels from the ocean beach itself laid bare at every receding tide, to the summit of ranges verging on the limits of perpetual snow, as on the Benger and Hawkden Ranges, 4,000 ft. high. Having to grope in the dark, as it were, for this hidden treasure, and to call in the aid of hydraulic pressure to disintegrate and wash away vast superincumbent masses of gravel, the miner has often long months of preparatory work before he has any returns. This delay tells on the year's output of gold, and although the alluvial mining will last for many years and have periods of revival, yet the tendency will be towards a diminution in the annual field.

GOVERNMENT AID TO GOLD MINING.

The New Zealand Government have set an example worthy of imitation by all other gold-producing countries. While realizing the value of the gold-mining industry to the material progress of the country it has wisely inaugurated a system of rendering tangible support by the construction of water-races, sludge-channels, reservoirs, roads, tram-roads, &c., to aid the more economical development of mines that without such timely aid would have been almost inaccessible. The report says:—

"During the year a large number of works have been entered on, comprehending roads and tracks, water supply and sludge-channels, and prospecting for deposits of gold, involving, between payments actually made and liabilities, a sum of £70,000. The disbursement of this large sum, and other sums voted by Parliament, together with the charge of half-a-million of property in water-races, imposed serious responsibilities on the department, which could not, it was found from former experience, be satisfactorily met without the aid of some one who would be solely devoted to the duty of reporting on each work before it was entered on, and of inspecting works while in progress and after completion."

Mr. H. A. Gordon is the Inspecting Engineer appointed by the Government, and he appears to have entered on his work with energy and ability, and from the general tenor of his reports and that of the wardens of the several gold fields shows that New Zealand possesses rich tracts of auriferous country yet to work, and the general prospects of gold mining are such that with the judicious expenditure of capital and labor that the field of enterprise for the profitable production of gold is practically inexhaustible, and bids fair to give New Zealand a high status in the gold-producing countries of the world.

As an instance of the value of the construction of water-races and other permanent reproductive works to aid the development of gold mining, Mr. H. A. Gordon, in his report to the Under Secretary for Mines, says, in reference to the Nelson Creek Water Race, for the year ending March 31st, 1883:—

"The amount received from sales of water during the year has been £2,237 6s. 3d., and the expenditure on maintenance £1,218 17s. 10d., thus leaving a balance of £1,018 8s. 5d. profit on the working of the race.

"The average number of miners employed in working ground with water from the race during the year has been 61, and the approximate amount of gold obtained by them during that period has been 3,748 ozs., representing the value of £14,336 2s. After deducting from this sum the amount paid for water, it leaves £12,098 15s. 9d. as the total earnings of the miners employed, being £198 6s. 8d. each per annum, or £3 16s. 6d. per week per man."

The valuable assistance rendered by the New Zealand Government in the construction of water-races, or subsidising local councils or water trusts, will be likely to bear good results in the future supply of gold,—as such works, when constructed, give a permanent power for the production of wealth that can be utilized at all times and for many purposes.

Mr. Gow, manager of the Waimea, Kumara water-race and sludge-channel, reports:—

"WAIMEA RACE.—The condition of the race and prospects of the workings generally are much the same as at the date of my last annual report. The race maintains about the same number of miners, whose earnings will probably average the same as last year."

"KUMARA RACE.—Sluicing on a large scale with patent nozzles is now the order of the day. There are eight giant nozzles on the field, and I am informed there are many more ordered and on their way from Dunedin. It speaks well for the stability of the claims when the miners can see their way to get these costly but most useful things before their claims can be said to be properly opened out, and with considerable liabilities, which have been accumulating for the past twelve or eighteen months, to be paid out of the first washings."

During the past month nearly all the sluicing claims on the field have washed up, and I learn that, with very few exceptions, the washings have been most satisfactory, while a few were handsome, and promise large returns for several years to come. Of the 25 sluicing parties taking water from the Government race, and who have washed up during the month, I have only heard of four parties complaining of their returns, while three of these are sanguine of their claims ultimately paying. The result of the washings generally has established this as the best sluicing field in New Zealand, and each claim shows how very evenly the gold is distributed from surface to bottom (from 30 to 100 feet), over a very large area that will be profitably sluiced for many years. The miners generally are well pleased with their washings and the good prospects before them.

Mr. Warden Revell, in his report to Under-Secretary for Gold Fields on the "Inangahua Mining District," May 23rd, 1883, says:—

"Since the date of my last report the mining industry has undergone considerable development, and marked progress has been made, although undue excitement had taken place in consequence of rich discoveries. 'The prospects of the field were never brighter or sounder than at the present time.'

"Up to the time of my late report quartz mining had been confined to Murray, Boatman's, Larry's and Devil's Creeks; but during the spurt about eighteen to twenty miles south of Reefton was prospected, with apparently good results. The almost inaccessible nature of the country in this direction, however, will render the development of discoveries a matter of time. Some distance further south, in the Snowy River District, very good prospects were obtained, and a good number of leases have been applied for. I mention the new discoveries in this direction with the view of bringing under notice the vast extent of auriferous country in this district, which can be justly computed at forty miles in length. During the year important discoveries were made nearer Reefton, notably on the globe lode, which averages ten to fifteen feet in width." The development of the mine appears to be entered on in an energetic way. "There will be telephone communication between the mine and battery. The battery will consist of twenty head of stampers, driven by a turbine. The machinery, race, and aërial tramway will cost about £6,000."

Many other companies and mines are mentioned as entering upon extensive works of development with every prospect of success. The yield of gold from the district for the year has been 26,365 ozs., value £102,019 2s. 9d.

As an instance of how gold-mining claims will quickly become developed in a new mining district where the prospects are good and the dividends of a few successful mines are of an encouraging nature, may be understood from the explanation given by a table showing the amount of calls made and dividends declared, &c., in the Inangahua district, from the 1st April, 1882, to 31st March, 1883:—

NAME OF COMPANY.	TONS QUARTZ.	OZS.	DIVIDENDS.
The Welcome Company crushed	4,953	yield 7,429	£15,000
Keep-it-Dark ,, ,,	9,194	7,174	17,000
Golden Treasure ,, ,,	703	636	600
Oriental ,, ,,	580	295	—
Golden Fleece Extended Company ,,	1,881	2,433	—
Wealth of Nations Extended Company ,,	440	402	—
Imperial ,, ,,	811	468	—
Just in Time ,, ,,	345	314	—
Southern Cross ,, ,,	21	43	—
	18,928	19,194	32,600

On the above excellent yield of gold from the crushings of a new mining district averaging over an oz. of gold per ton, and three companies commencing with dividends of £32,000, substantial encouragement is given for energetic development of this district. Sixty-six gold mining companies are in operation, which, during the year, have made calls and expended £61,344 15s., varying in amounts from £50 to £5,700, or an average, excluding the dividend mines, of about £1,000 per company.

There can be little doubt from the yield of the mines now crushing that several more companies will be soon added to the dividend list, and that many others will soon follow in that category. Such is the result of practical mining knowledge and economical expenditure of capital and labor under local supervision, and what a contrast is shown to the wasteful and extravagant management of the so-called gold-mining companies of India and Africa, where, in many instances, more money has been uselessly squandered by one company than, under good management, would be profitably utilized by ten or twenty mines.

The enormous profitable results obtained by the production of nearly £300,000,000 sterling in gold from the colonies of Victoria, New South Wales, Queensland and New Zealand, have been mostly through the manual labor of the gold-miner, under the practical management of gold mines.

With the excellent prospects as a gold-producing country, as set forth by the reports of the various New Zealand gold fields, with the sensible and material aid rendered by the Government and local bodies to the mining industry, and the energy displayed by the miners and capitalists, the productiveness of the gold fields will be increased and permanently maintained, while the general prosperity of this rich colony will be proportionately increased.

SOUTH AUSTRALIA.

Little gold has as yet been discovered in this colony, although several attempts have been made to develop what the colonists at one time hoped would prove a payable gold field. In the northern territory a considerable portion of auriferous country has been discovered and prospected, many of the mines turning out very successful. The difficulties of settling a new and undeveloped country without the attraction of gold has been forcibly demonstrated in the settlement of the northern territory.

In August, 1872, the telegraph line between Port Augusta and Port Darwin was completed. In the previous year gold had been found by the first prospecting party sent to the territory. They were despatched in consequence of some of the telegraph-construction men having discovered the precious metal. It was known that men belonging to Mr. Finniss' expedition had found gold, and, judging from these discoveries and the character of the country, it was thought most likely that a considerable gold field would be found there. Many parties were formed and followed the pioneer expedition in 1872, and the following year. During the year 1873, a gold mania took the people of Adelaide by storm, and considerable excitement was created by the sensational telegrams from the Northern Eldorado.

This having been the first great excitement created by the discovery of gold within territory belonging to South Australia, the inhabitants became unduly elated over what appeared to them to be a rival to the Victorian gold fields. A considerable rush of miners took place and a number of companies were hurriedly formed, and machinery dispatched to Port Darwin, but a large portion of it never reached the gold fields at the time.

I know many practical miners who went to the Northern Territory gold fields, some of whom remained there a considerable time and worked with fair success. Some of the quartz reefs are very rich, and likely to prove permanent, but the difficulties of prospecting for gold in a tropical climate without the necessaries and luxuries of life to render the living more comfortable, are such that will retard the development of the auriferous and mineral resources of the Northern Territory until a railway is built to the gold fields—which should have been one of the first considerations of the South Australian Government after the completion of the telegraph line, and establishing the fact of payable gold being found. Had a railway been commenced in 1873 from Port Darwin to Pine Creek, it would have induced a rapid and permanent settlement of that portion of the Northern Territory, and, by this time, there would have been a large and prosperous population. It is satisfactory to know that the construction of this railway is about being commenced, and, when completed, will, I think, be found one of the most useful and important public works ever inaugurated by that Government. It is not only that gold has been found in abundance extending over a considerable tract of country, but valuable discoveries of other minerals—tin and copper—have also been found, the development of which, in conjunction with the working of the rich gold mines, will attract, and give profitable employment to, a large population, and the Northern Territory will, in all probability, soon become an important addition to the Australian gold-producing colonies.

TASMANIA

Has also within the last few years become noted for the discovery and working of some rich gold mines, in addition to the vast deposits of stream tin.

The statistics of the production of gold there I have not obtained, but I am aware that several of the gold mines have been very profitable, and likely to induce an increased development of mining industry.

WEST AUSTRALIA.

The settlement of this vast-sized colony has been much retarded in consequence of no valuable discoveries of gold to attract population thereto.

From information lately derived from a reliable source, it appears that a payable gold field has been discovered by a well-known mining engineer, late of Ballarat, and which is likely to prove of considerable importance to advance the interest of that hitherto little-known colony. This valuable discovery was made by Mr. George Simpson, in the Blackwood district, within a few miles of the Jarrah Forest Timber Concession, granted to the West Australian Timber Company. A bold outcrop of a large quartz reef was discovered on a hill rising about 600 ft. high, which was so favorable in its appearance that the discoverer sent a fair sample of the stone to the Ballarat School of Mines for treatment, which resulted in a yield at the rate of one ounce of gold per ton; with this encouraging prospect there should soon be a development of the New Eldorado. Other discoveries of a promising nature have also been made by the same authority on the Canon River, twenty miles from Perth, a shaft having been sunk by him at the foot of a range on what was apparently a lead of auriferous deposits, or the bed of an ancient river. Mr. Simpson reports having sunk through 40 ft. of black or argillaceous clay, and then got into a heavy drift containing much water, preventing his sinking deeper, the water rising to the top of the shaft, from which it has since been running over. The ranges above this lead consist of Hornblend and Diorite Dykes, and distinct quartz lodes, apparently of an auriferous character. In the same district, the Silurian formation crops out at the foot of the ranges, showing it to be of the true character for containing gold-bearing quartz.

In many places on the Darling Ranges there are strong indications of auriferous deposits and quartz lodes, which, in time, with experience and energy in development, may prove a profitable gold field.

The mining regulations appear to be of a very incongruous character, and the Government do not seem to have made much effort of a practical nature to develop the mineral resources of the colony, which contain not only good prospects of gold, but copper, lead, tin, iron and other minerals can be found in abundance. The development of the mineral resources of this vast colony should receive the special attention and encouragement of the Government, and it would be the most profitable means of employing some of their revenue to have the mineral resources of the colony prospected and developed, which, when made known, would be the most effective means of attracting population to its shores. The discovery of a payable gold field, and the framing of liberal mining regulations, giving security of tenure to mines, will do more to increase the population and wealth of the colony than that of anything else. It is true the Government have a standing offer of a reward of £5,000 for the discovery of a payable gold field; but it would be advisable that the Government supplemented private efforts, or, under the guidance of experienced mining engineers, judiciously spent a few thousand pounds in prospecting for gold and other minerals.

The Government have framed their land regulations on a very liberal scale, whereby pastoral and agricultural lands can be acquired under lease in large quantities at from 5s. to 20s. per 1,000 acres per annum, with the pre-emptive right of purchase at from 2s. 6d. to 10s. per acre, but when it comes to dealing with mineral lands their liberality is not so transparent.

The opening of a profitable gold field would soon attract thousands of gold miners, and, in their train, would follow many thousands of other sections of the community, and the population and wealth of West Australia would be doubled or trebled in a few years.

A territory of such vast proportions as this colony, containing, as it does, over 1,000,000 square miles, and only about 32,000 of a population, will make but slow progress if it does not make an effort to develop its gold and other mineral resources, which apparently abound in profusion, but awaits the hand of industry and capital intelligently directed to explore.

With the experience of the marvellous progress of other colonies since the discoveries, and by the agency of gold, the Government of West Australia should lose no time in having the prospects of the auriferous wealth of the colony fully made known. Any neglect or delay in aiding the development of the mineral resources of the colony will reflect discredit on the Government, and be a loss to the community.

AFRICA.

On the West (or gold) Coast, gold has been obtained from time immemorial, and from a visit I made there in 1881, I am satisfied that there is a vast extent of country abounding in auriferous wealth, to obtain which will require much care, intelligence, and skill in directing capital and labor in gold-mining operations. In places along the coast near the mouths of rivers and small streams, considerable quantities of gold are finely distributed in the black sand and washed up along the beach, where in places excellent prospects can be obtained. That the distribution of gold extends over an enormous area of country, there can be little doubt. And it is a question of time and means for exploration and development of the gold mines when the gold coast of Africa may be the means of materially adding to the "supply of gold." There will not be the advantages for the full development of the auriferous resources of this country by individual labor as there has been in Australia and America. In those countries the land belonged to the several Governments who were in a position to issue licences or rights to individuals to mine for gold, and the forests or bush country was easier to explore than the African forest. Then, also, there were the advantages of civilization, and the means of living more in accordance with custom than can be the case there for some time, if ever.

The climatic influences will also be always against the development of gold mining on this specially unhealthy shore. It is too hot and close for white men to work, and it will be enough for them to do the skilled work and supervise that of the natives, Kroomen, Coolies and others, who will have to be employed for the general working of the mines.

For the past two centuries and more the Gold Coast of West Africa has been a great depôt for the supply of gold, and for the most part a bone of contention and warfare between various European nations, as also the native inhabitants of the country, but the means and methods by which the natives obtained their supply of the precious metal could only have been of the rudest and most primitive kind. That a large supply of gold must have been obtained from this coast, there can be no doubt, as along the entire Gold Coast of about 300 miles, forts were built and held by various nations for the purpose of trading and getting, when and where possible, a monopoly of the gold trade.

According to the writings of Bosman (1700) the Dutch appeared to be the principal traders and factors on the coast, and to have held or built many of the chief forts. From the admissions of the author they were adepts in the practice of cheating the natives in their dealings with them for gold. The writer appears to have received instructions to make himself acquainted with the history and resources of the Gold Coast and the country inland as much as possible, and, considering the time and circumstances under which he was placed, and the difficulty of acquiring information, he has handed down a work containing much information of value to those interested in the production of gold and other minerals on the West Coast of Africa.

He says:—"Guinea is a large country, extending several hundred miles, abounding with innumerable kingdoms and commonwealths. The Gold Coast, being a part of Guinea, is extended about 60 miles, beginning with the Gold River, three miles west of Assine, or twelve above Axim, and ending with the village Ponni, seven or eight miles east of Acra. The Negroe inhabitants are generally very rich, driving a great trade with the Europeans for gold, which they chiefly vend to the English and Zealand interlopers, notwithstanding the severe penalty they incur thereby, for if we catch them their so-bought goods are not only forfeited, but a heavy fine is laid upon them. Not deterred, I say, by this, they all hope to escape, to effect which they bribe our slaves (who are set as watch or spies over them) to let them pass by night, by which means we are hindered from having much

—one hundredth part of the gold of this land. And the plain reason why the natives run the risk of trading with the interlopers is, that their goods are sometimes better than ours, and always to be had one-third cheaper, whereby they are encouraged against the danger, very well knowing that a successful correspondence will soon enrich them."

During my investigations on the Gold Coast I observed that much work had at one time been done on the various lines of quartz reefs which abound in that section of gold country, also the washing of alluvial deposits in the flats and gullies which appeared likely to produce gold, and in former days when the gold workings were carried on extensively the population must have been very numerous.

In and around the town of Axim there are indications of auriferous country, veins of quartz cropping out in some of the streets near the sea-shore, in the flats, and along the course of the streams are beds of auriferous gravel, which, no doubt, in many cases, will some day be profitably worked. The Akankoo mine, which I went most specially to examine and report on, offered good indications for future success, if properly managed; but, unfortunately for the prospects of gold mining on the West Coast of Africa the directors, like those of most other companies out there, became imbued with the idea that those who had never seen a gold mine, or understood anything of its working or system of development, knew better how to conduct the operations of gold mining under difficult circumstances and in an unhealthy climate than practical and experienced miners. The consequences have been that large sums of money were recklessly squandered under the most extravagant and ignorant systems of management, and several companies that started, some with very fair prospects of success, having squandered all their capital, are now waiting "Micawber-like" for "something to turn up." It may be that the dawn of reason and dearly-bought experience will enlighten them as to the folly of entrusting the expenditure of capital and the management of gold mines in the hands of amateurs.

The vendors of mines and concessions and directors of companies on that coast did not apparently desire to be guided by any practical advisers, but preferred a "blundering and plundering" policy of their own, which has ended, just as I expected it would do, in stagnation to the industry and ruin to the companies, through the perverse obstinacy and incapacity of directors and the utter ignorance of practical mining, and the extravagant habits of managers sent out to conduct the operations and to carry out the ridiculous theories of directors and amateur advisers.

In going up to the Tacquah gold mines I passed over a good deal of country that showed every indication of being auriferous, and from the development of the mines in that district and the prospect obtained, there can be little doubt that, under efficient management, the mines could be worked at good profit.

An attack of fever which laid me up for eight days prevented my examining as much of the Tacquah district as I should like to have done, but from what I saw I am convinced of the auriferous nature of the country, and that the success of gold mining there must be dependent on good management and efficient machinery and appliances.

The following remarks I made in the *Mining Journal*, August 20th, 1881, after my return from Africa, and, had my advice been followed, the West African gold mines might have been a success instead of a disastrous failure, as most of them are, so far:—

"In the development of the mines in the Tacquah district, which have now been in operation about four years, there has been a good deal of money spent that, under more experienced direction, might have been much better applied and turned to more profitable account. From what I could see and learn of the general management of several of the mines there has been a want of practical knowledge in gold mining, as also of common sense or business capacity in the direction and general management of the works, and the ordering, purchasing, and transporting of goods and material wholly unnecessary for the development of the mines; and when the carriage of goods and machinery overland by native carriers has to be considered the greatest care should be taken that no goods or machinery should be sent to the mines but what are absolutely essential, and those that are sent should be of the best and most effective kind. In sending machinery, duplicates of all parts liable to wear or breakage should be supplied, so that in case of accident there may be no delay of being obliged to send to England for the duplicate of such article as may be worn or broken.

"The bush or forest tract, over which all goods and machinery have to be carried by native carriers on their heads or shoulders, is in a most wretched state, and little trouble has been taken to improve it. The great mistake the mining companies in the Tacquah district have made is in not adopting some system of co-operation for the improvement of the road for carriage before commencing to get up heavy goods and machinery; with a little judicious co-operation amongst themselves, and a moderate display of engineering talent and direction of native labor, a fairly-passable road with decent bridges might have been constructed in a few months that would have materially facilitated the operations of the companies now at work, and greatly reduced their costs for carriage, and long ere this some of the companies might have been making returns of gold to the shareholders, instead of making calls, with no immediate prospect of stoppage. At the depots at Tomenta and Bounsa decent places of accommodation should be provided, with a supply of food and drink suitable to the requirements of Europeans when on the road. It is not pleasant either for visitors, or more especially newly-arrived employees from England, to find themselves in a strange country, on a rough road, and in a bad climate, liable to be reduced to a state of semi-starvation, or be compelled to live on native food of Kanki, when, with a little forethought, such disagreeable first impressions might be avoided. On the line of road from Tomenta to the mines are here and there to be seen pieces of machinery which should have long ago been delivered, but which cannot be done now until after the wet season is over. I was somewhat surprised to find that some companies had erected, and intend erecting, saw-mill machinery before erecting their crushing batteries. This is an absurd waste of time and money, as such machinery is unnecessary for the early development of their mines; any timber required for the frame-work of engines and batteries can readily be obtained on the ground, and either cut by the pit-saw, or cut and squared by axe and adze.

"The sending out of wooden or iron houses is also a mistake, as better material can be obtained on the spot, by the use of native bamboo and thatch, which are not only cheaper, but much cooler, and can be made more comfortable than iron or imported wooden houses. I am surprised that any one having had experience of the coast should advocate the policy of sending out such expensive and unnecessary material as iron or wooden houses. The Government authorities are committing the same blunder by sending out a useless lot of rubbish to Axim, in the shape of a ready-made house for the Commissioner at Tacquah, but there is not much likelihood of its arriving at its destination, and it will either rot at Axim or be re-shipped back to England. If the authorities had expended the money wasted on that house by improving the road from Tomenta to Tacquah it would have been some benefit, not only to the Government, but to the increasing population of the district.

"If the gold fields of West Africa are to be profitably worked, it will be necessary for companies to exercise economy in their expenditure, a judicious selection of experienced officers and miners to direct and superintend the native laborers, as, also, in the selection and erection of suitable machinery, and not to pay too high a premium for the privilege of prospecting a mine.

"Considerable attention having already been paid to the Gold-Coast mines, a number of active persons are in the field hunting for and making arrangements with native chiefs for concessions for mining; no doubt, some of these concessions may be very valuable, yet, probably, a large number will be appraised at a price much beyond their legitimate worth.

"The opening-up of a number of gold mines in the district of Axim, the introduction of English capital, and the increase of a European and outside native population, should, as a natural consequence, command the immediate and earnest attention of the Government as to the protection of valuable property and the due administration of the law.

"There can be no doubt that, from the large area of auriferous country already discovered and the favorable prospects obtained from mines already opened, and others about to commence operations, there will be a rapid increase of trade and commerce to the Port of Axim, which will require the active and intelligent supervision and efficient protection of the Government; also, in the interest of her Majesty's Government on the coast, the native population and the gold-mining companies, the Government should appoint Gold Commissioners with the powers of magistrates at the principal mining centres, to supervise the acquisition, registration and surveying of concessions by companies or private individuals, and to determine all disputes with regard to mining lands that may arise. All rights and titles to mining lands in the district should be registered at the Court at Axim, and this should be compulsory.

"The native chiefs (who are the owners of the land) and the people are very averse to proceeding to Cape Coast Castle for such objects, where the

Government officials possess none of the local knowledge so necessary in these matters, besides entailing on them very considerable expense. It would be advisable that the Government at once consider the question of stationing a portion of the forces now there in an unhealthy part of the coast, and transferring them to the more healthy and convenient position of the gold mining district of Tacquah, where the services of officers and men could be profitably and usefully employed in surveying and constructing a light line of railway from Tomenta to the Tacquah mining district, the opening of which would, I believe, develop much additional valuable auriferous land, and open-up the country to commerce and civilization.

"If a British protectorate over the Gold Coast territory of Africa is to be of any service, the gold-mining question and the requirements of an increasing population must be earnestly and intelligently considered."

The history of the disastrous failures of the several companies that have squandered their capital or come to grief over experimental efforts at gold mining on the West Coast of Africa has been brought about entirely through the utter incapacity and want of experience of the managers or superintendents and the ridiculous vanity and perverse obstinacy of vendors and directors who refused to be guided by the advice of reason, common sense or practical experience.

The words of caution, which I deemed it incumbent to publish after my return from Africa, as mentioned above, and the remarks I have occasionally made since, did, I am aware, create a prejudicial feeling amongst certain vendors and directors, that my remarks and advice were uncalled for, and that it was unnecessary for me to dissuade shareholders or investors from being deluded into dangerous investments which it was their interests to foist upon the public by misrepresentations under the guise of "valuable gold-mining properties."

As those for whom I went to the Gold Coast to inspect and report on the prospects for gold expressed their satisfaction and congratulated their fellow shareholders at having secured the services of a practical authority on gold mining for inspection of their properties, and knowing that much capital had been foolishly wasted in attempts at gold mining, and that much further capital would also be similarly wasted under the advice of amateur authorities, I considered it my duty, not only to the companies who engaged my services to inspect, but to the public who were likely to invest money in gold mining in Africa, to caution them against extravagant expenditure of capital in the purchase of over-valued gold-mining properties, or entrusting the management of their mines or business affairs in the hands of enthusiastic amateurs who had no experience, but were desirous of acquiring it at the expense of other people.

Highly-spiced reports, based on suppositious theories and the vivid imagination of interested novices in gold mining, or those written from hearsay and conjecture, which, if not fraudulent in intent, were misleading in purport, however profitable to the writers or gratifying for the time being to vendors or others interested in the sale of properties, may, and, no doubt, did, answer for the immediate purpose of deluding the unwary to invest, on the faith of such specious promises; but the day of reckoning must, and has, in some cases, come for the chicanery to be detected. Our gold supply from West Africa is not increased, nor can dividends be paid by misrepresentations, extravagance and mismanagement.

Gold mining, or the production of gold, is of itself an industry, one of the most honest of all pursuits. "Pure as Gold" is an old saying, and, in fact, "Gold" is an emblem of wealth, purity, honesty and innocence; whilst in its name, or for its gain, is perpetrated every form of vice, fraud and deceit. Our gold supply, or the profits of gold mining, has to depend entirely on experience and skill in the direction of capital and labor necessary for its production, and the amount and purity of the gold contained in the matrix operated on by the various systems and conditions under which gold mining is carried on.

High-sounding names and titles of individuals will not add to or detract from the value of the auriferous deposits in "Nature's National Bank of Issue," or of the purity of the gold itself when produced. The quantities of matrix to be obtained from lodes or auriferous deposits are dependent on natural causes, while the quantity of gold and the profits of acquiring it must be from results dependent on the judgment, experience and skill of those responsible for the superintendence or direction of capital and labor in its production.

It has been in consequence of so much ignorance and extravagance in the management of gold mining, and the ridiculous reports from managers and superintendents of mines in West Africa during the last few years, that has brought the interest of gold mining into such disfavor in that country, and been the means of wasting so much time and capital.

That there is an extensive area of auriferous country in West Africa, there can be no doubt, also that much of the country will be rich when properly developed; in consequence of the difficulties to be encountered in travelling and the transport of goods and machinery, as also the unhealthy nature of the climate, much care and experience will be required to be exercised in conducting gold-mining operations to work the mines with profit, or materially add to the gold supply of that portion of country.

Some amateur mining authorities who have been making futile efforts to develop the auriferous resources of the Gold Coast, have set forth their opinions with confident assurance that "the country is full of gold," and giving to the uninitiated in gold mining the idea that the whole soil from the surface to the bed-rock was impregnated with gold; and from the exaggerated statements made it would appear that in every shovelful of soil or gravel that may be raised a good prospect of gold might be obtained, and that every quartz lode or outcrop of quartz, and every little thread-like vein exposed to the surface, was also rich in gold.

The statements so recklessly made by inexperienced men have, unfortunately, been too readily believed by over-confident admirers of these amateur authorities, who, after an extravagant expenditure of large sums of money find their efforts at gold mining have ended in a miserable *fiasco*, bringing not only disgrace upon themselves and disappointment to the unfortunate investors, but discredit upon the Gold Coast generally as a profitable field for legitimate enterprise.

Not only were many of the remarks made on the auriferous wealth of the Gold Coast by these amateur mining authorities utterly misleading and highly exaggerated, but, in some cases, absolutely false, and evidently made to answer a purpose for interested motives, or from their ignorance of practical mining, or want of common sense of those who uttered them.

In the palmiest days of the richest gold fields of Australia and California, the ridiculous reports, as published, of the prospects of the Gold Coast and the Transvaal would not have applied. There were no instances, not even in the richest gold-fields of the world, such as Ballarat, Bendigo, Forest Creek, and others, where it could be said that "the country was full of gold," or that the soil and gravel on all parts of the gold field contained gold in paying quantities. Such is not the case on any gold field that I have seen in Australia, America or Africa, nor is it likely to exist in other places. So far as regards the exaggerated reports given by some of the amateur authorities as to the value of mines and the prospects to be obtained by working the quartz reefs and alluvial deposits on the Gold Coast, they have proved, by their own experiments, to be not only grossly exaggerated and misleading, but absolutely untrue. The prospects of gold mining on the West Coast of Africa have been maligned, retarded and materially injured by the ridiculous reports, false information, defective management of the mines and works, extravagance and incapacity of those responsible for the business affairs of the companies.

SOUTH AFRICA.

The Transvaal gold fields in South Africa have occupied some attention since their first discovery, but the production of the mines so far has not been in proportion to what might have been expected from the reports of several who have been specially selected to inspect and prospect these fields.

I remember a number of Australian gold miners going to the Transvaal some years since, soon after the discovery of gold, but they did not give a very flourishing account of the prospects at that time.

That gold has been discovered extending over a large area of country, and can, in many places, be worked with profit, there is no doubt; but whether the results of future operations will prove equal to the very high anticipations of some of the engineers who have been examining and reporting on the gold fields is somewhat problematical. The reports as published are certainly of a most startling nature.

Mr. John M. Stuart, C. & M.E., in his report on the Farm Lisbon, in the Lydenburg district, says:—

"I travelled several hundred miles, and I formed the opinion that no country that I have seen or heard of is so thoroughly and variously mineralized as the Transvaal. I found gold rock extending over no less than 400 square miles of territory, and I also found garnets, rubies, iron, coal, lead, silver, copper, cobalt, asbestos, mica and cinnabar or quicksilver ore.

"The discovery of gold, so far as regards the English, may take date from 1870, but I soon found that the Transvaal must have been extensively worked by the miners of ancient times. I came upon the remains of old workings, showing that centuries ago mining was carried on to a great extent; that vast quantities of ore had been worked, and that by engineers of a very high order. I found quarries, tunnels, shafts, adits, the remains of well-made roads, and also piles of ore on the side of these old roads apparently ready to be put into wagons. This ore was piled up with as much regularity as if it had been placed for strict measurement, and it would seem as if these workings had been abandoned precipitately by the miners.

"I prefer to attribute these workings to the Portuguese, who are historically known to have had many trading possessions, and to have gained much gold in this section in the seventeenth century."

I made a thorough investigation as to the land system and security of titles to land in the Transvaal, and am convinced it is simple, perfect and safe to all. The titles emanate from the Government, and are required to be registered with the Registrar-General.

GOLD VEINS.

Running through the Farm, Lisbon, north-east and south-west, there are three large fissure veins which have cut through the granite and metamorphic slates. These veins crop above the surface and can be traced for long distances. Running at right angles to these fissure veins are many veins, which vary in width from one inch to one foot. It is upon these veins that the greater part of the work has been done. At one point on the hill mentioned, eleven veins run abruptly from the river to the summit of the hill.

These eleven veins, although narrow, are well defined, perfect and regular; they are separated from each other by walls of slate. These eleven veins, with their slate interlaminations, constitute, practically, one vein 80-ft. wide, one mile long, and on an average 325-ft. deep. This vein has been proved by workings to a large extent at numerous points through its entire length. I estimate there are within the area of this vein 8,750,000 tons of slate, and 656,250 tons of quartz, which, when milled, will yield 10 ozs. (say £38) to the ton. A large number of assays made by me were very much higher than this estimate, in some instances giving for the quartz as high as 1,000 ozs., or £3,800 to the ton. As to the slate, the softer portion should yield $\frac{1}{2}$ oz., or £2 to the ton, and the harder portion $\frac{1}{4}$ oz., or £1 to the ton; but in my estimate, I think it safer not to attach any value to the slate.

I estimate that the average value of the whole vein matter, ore and slate together, if worked jointly, should be 13 dwts. 22$\frac{9}{10}$ grs. = £2 14s. to the ton. The aggregate value of the whole material (ore and slate) at the above valuation would be £25,396,875 sterling.

The ore being in many respects similar to that of the mines at Ballarat, Australia, and the Black Hills, Dakota (U.S.A.), I would recommend the use of the same description of mills, with a large number of stamps, so as to crush a great quantity of ore daily.

Another authority, in a letter, says:—"He cannot allow so astonishingly low a valuation as Mr. Stuart's to pass unchallenged. After a most careful review of Mr. Stuart's report, he estimates the quartz at 20 ozs., slate $\frac{1}{4}$ oz., or an average of 1 oz. 12 dwts. 13 grs. per ton, or a total estimate of about £59,336,000."

It is difficult to understand why more gold has not been obtained from the Transvaal since 1870, if the quartz reefs and alluvial deposits are as rich as stated. With an ample supply of water, a good climate and plenty of cheap labor, large quantities of gold should have been turned out annually, and it is further a matter of surprise to me that as so many have visited and reported on the value of the Transvaal, that some of them have not taken advantage of sending to England a quantity, say, 100 tons, of this very rich quartz, which, at 20 ozs. per ton would be, say, £8,000, and allowing £20 per ton for cost of getting, transport, freight, &c., would have left a profit of about £6,000. Absolute evidence of the results of such a practical trial of crushing 100 tons of quartz from these veins would have been the most satisfactory test of their value.

Other reports I have read, and from conversations I have had with practical miners who have been working on the Transvaal gold fields, and who have sold out their claims, do not tend to confirm the high estimates formed by Messrs. Stuart and others of the vast riches of these fields; but I trust their estimates may be fully realized.

As to the expressed opinion that the ore is in many respects similar to that of the mines at Ballarat, Australia, I fail to perceive the resemblance either in the ore or in the geological formation of the country. I am well acquainted with Ballarat, and the history of the development of the various alluvial leads and quartz reefs in and about the district, as also the Colony of Victoria generally, and some other parts of the world; but from the description given of the Transvaal, I cannot see where the resemblance is to the Ballarat gold field. Should the prognostications of the success of the Transvaal gold fields be no nearer the mark than its professed resemblance to Ballarat, its extravagant hopes of prosperity will, I fear, be blighted.

From the general description given of these gold fields, the ease and facility with which gold can be obtained, the abundant water supply, genial climate, and cheap labor, I cannot understand why more gold has not been obtained, and is not now being shipped home.

There was no necessity for the organization of companies with millions and hundreds of thousands sterling of capital to work and develop gold-mining properties, where the matrix is virtually on the surface, and in such abundance that some enthusiasts, gifted with powerful visionary organs, can see millions of tons of ore in sight.

The raising of such huge capitals to carry out very moderate mining operations is like erecting a Nasmyth steam hammer to crack a walnut.

No ordinary gold mining operation is ever likely to pay good interest on such ponderous capitals as some of the mining companies in the Transvaal are handicapped with. It would have been found more profitable to the companies, and, in the end, more satisfactory to vendors and promoters, if they had been content to have had the mines opened-up in a practical and legitimate way; with a moderate capital, moderate, but efficient, appliances for proving the value of the mines, and with reasonable-sized areas for mining properties, that could have been worked advantageously. "Grasping at a shadow and losing the substance" is often experienced by those who claim to monopolise huge areas of country they can neither prospect properly or work to advantage.

That the Transvaal will, in many places, develop profitable gold fields when efficiently and economically worked, I have but little doubt; and it is a source of regret that so rich a mineralized tract of country should have been allowed to pass out of the control of British people.

The value of the gold production of the Australian Colonies should have been sufficient evidence to the authorities of the British Government as to the desirability of retaining possession of a vast extent of auriferous, mineralized and healthy country that was capable of affording a wide field for profitable and legitimate enterprise, and materially adding to the gold supply.

Gold mining, or the production of gold, that special form of wealth which all mankind are so anxious to acquire, has generally to suffer hindrances from governments and officials whose duty should be to encourage, instead of to thwart, the progress of the industry.

Men of all classes and shades of opinions appear to think it the correct thing to ignore or condemn gold mining as an industry of which they know literally nothing, and the more profound their ignorance of the subject the more reckless are their assertions.

Many people imagine that gold mining, or the advising on gold-mining investments, or the direction of capital in the development of gold-mining properties, is an occupation requiring neither practical knowledge nor experience, that the less a man knows of the subject the better authority he is, that the industry is a kind of fool's paradise, or an asylum for the useless and incompetent of all degrees, that those who have failed or disgraced themselves in any other occupation in life, are very well suited to direct the operations of gold mining.

The consequences have been that many of the so-called gold mining companies in India, Africa, and other places which were ushered into existence during a mania of silly excitement, with their prospects of success based on the excited imaginations and unwarranted representations of incompetent authorities, have come to grief, as was to be expected, through the ignorance, extravagance and incapacity of those who undertook the direction and control of the mining and business operations.

GOLD IN EUROPE AND GREAT BRITAIN.

In Dr. Ure's "Dictionary of Arts, Manufactures and Mines," edited by Mr. Robert Hunt, it says:—

"The auriferous ores of Hungary and Transylvania, composed of tellurium, silver pyrites, or sulphide of silver and native gold, lie in masses or veins in a rock of trachyte, or in a decomposed felspar subordinate to it. Such is the locality of the gold ore of Konigsberg, of Telkebanya, between Eperies and Tokay, in Hungary, and probably that of the gold ores of Kapnick, Felsobanya, &c., in Transylvania; an arrangement nearly the same with what occurs in equatorial America.

"Breislak and Hacquet have described the gold mines of Transylvania as situated in the crater of an ancient volcano. The trachytes which, in some districts, form the principal portions of the rocks, including gold, are regarded as of igneous or volcanic origin.

"Spain anciently possessed mines of gold in regular veins, especially in the province of Asturias; but the richness of the Mexican mines caused them to be neglected. Julius Cæser is said to have paid his enormous debts, and added largely to the Roman treasury from the wealth which he derived from the Spanish mines. The Tagus, and some other streams of that country, were said to roll over golden sands.

"France contains no workable gold mines, but it presents, in several of its rivers, auriferous sands. There are some gold mines in Piedmont, particularly the veins of auriferous pyrites of Macugnagna, at the foot of Monte Rosa, lying in a mountain of gneiss; and although they do not contain ten or eleven grains of gold in a hundredweight, they have long defrayed the expenses of working them. On the southern slope of the Penine Alps, from the Simplon and Monte Rosa to the Valley of Aoste, several auriferous districts and rivers occur; such as the torrent Evenson, which has afforded much gold by washing; the Orco, in its passage from the Pont to the Po, the reddish ground over which this little river runs for several miles, and the hills in the neighbourhood of Chivasso, contain gold spangles in considerable quantity.

"In the County of Wicklow, in Ireland, in the year 1796, some fine specimens of gold were found,—one mass weighing 22 ounces. The gold is found in the *débris* of the valley at the base of Croghan-Kinshela, and it would appear to be derived from the granite of that mountain, or the hornblende greenstones by which it is traversed. Messrs. Weaver and Mills, however, prosecuted extensive mine workings in search of the source of the gold without any success. As we have already stated, the pyrites of Wicklow contain gold, but no auriferous veins have been discovered.

"In Cornwall gold has been found in the tin-streams of Carnon Vale, in the Pentuan stream works at Menaccan, and some few other spots; and some of the quartz veins traversing the slate have been found to contain gold. Many of the gossans of the copper lodes are known to have gold in them; but it is only in a few rare instances that the precious metal has been separated.

"In Devonshire, near North Molton, at the Britannia and at the Poltsmore mine, gold has been found in small quantities associated with the minerals of the district: but it has never paid the cost of obtaining it.

"In Scotland also gold has been found. Pennant says:—'In the reign of James IV. and V. vast wealth was procured in the Lead Hills from the gold washed from the mountains; in the reign of the latter not less than £300,000 sterling.'

"In North Wales, the older slaty rocks are auriferous. Professor Ramsay has examined and described the district, and especially the mineral and quartz veins of Cwm-eisen-isaf and Dol-y-frwynog, which contain gold. At Gogafan, not far from Llandovery, the Romans worked for gold, the remains of their workings being still undiscovered. Gogafan has been described by Mr. Warrington Smyth, in the Memoirs of the Geological Survey.

"In Wales, the known gold-producing counties are, Carnarvon, Flint, Cardigan, Caermarthen, Pembroke and Merioneth. Until recently Cardiganshire, probably, has rendered more service to the State, and profit to the explorers, by the production of gold than any other Welsh county, although Sir H. Middleton, while ostensibly working for silver in the time of Charles I. and his most loyal chemist and mineralogist, Thomas Bushell, did not leave on record all their knowledge respecting Welsh gold, and its associated minerals. But within the last few years Merionethshire has taken golden honors, sufficient, at least, to make them noteworthy."

The neighbourhoods of Dolgelly and Bala, at present, appear to comprise all the known Merioneth gold mines, and the following particulars thereof are chiefly compiled from papers on this subject in the *British Association Reports* by Mr. Readwin, F.G.S., who treats of them as being in the Dolgelly and Bala districts.

"The geological features of the district are now too well known to require more than a repetition of the general statement that the rocks are of the Cambrian and lower silurian series, forming a junction in a very sinuous course, and frequently cut through by narrow bands of porphyritic greenstone. The district is full of faults, and the metaliferous veins have a general bearing north-east and south-west, with an underlie to the north.

"There is a continuation of rocks of precisely the same character for a distance of six miles, running in a north-easterly direction to Costell Carn Dochan, in the Bala district.

"At the Cwmheisian mine there is a junction of fourteen lodes nearly forty feet wide, and the whole mass of the lode itself is said to contain gold in small quantities. Blende is occasionally found rich in gold. Mr. Dean extracted 148 ozs. from 157½ tons, and Mr. Clement 170 ozs. from 300 tons. Some specimens have been found by Mr. Readwin, containing as much as 87 ozs. to the ton. Almost all the known methods of gold-extraction have been tried at this mine; but, owing to the great preponderance of sulphides in the mineral, none of them succeeded.

"At the old Dolfrwynog Mine, specimens of decomposed quartz contained over 400 ozs. to the ton.

"The North Dolfrwynog lode-stuff has assayed about 30 dwts. per ton. About 100 tons of alluvium from the east bank of the Mawddach, on this mine, was washed with the object of ascertaining whether the particles of gold found therein increased in size from the surface to the bed rock. This was found to be the case, several ounces of gold, and it is probable the whole side of the mountain contains gold which might be profitably worked on the erection of machinery to economise labor.

"The Clogan, St. David, No. 1. mine, is certainly the richest gold mine ever worked in the British Islands, and may compare favorably with the quartz reefs of Australia. Taking this lode as a type of the neighbourhood, it will be well to describe it.

"The lode has an average bearing 15° north-east, and is intersected by a very powerful cross-course, bearing 30° north-west, and dipping slightly south-west. The lode traverses beds of indurated silurian clay-slates, which are interstratified with thick beds of greenstone. There is also a large greenstone dyke, which is traversed by a portion of the lode for a length of about 60 fathoms, until they are intersected by a great cross course. Behind this cross course the lode is extremely rich in gold. It should be stated that the lode is composed almost entirely of quartz, with here and there some carbonate of lime.

"The most remarkable item in Welsh gold statistics is the fact of 9,363 ozs. of gold having been obtained from less than 40 tons of quartz. It was here that the "poor copper ore" (referred to) was found, from which some twenty tons had been picked, sampled and sold as "copper ore," and, probably, several thousand ounces of gold were contained in it. The St. Helen smelters made no report, but offered an advance of five shillings per ton for as much more of it as could be raised.

"The gold obtained from this mine to May 30th, 1866, was 11,663 ozs. from 5,063 tons of quartz, averaging about 42 dwts. per ton.

"*Bala District.*—The gold discovery here was chiefly confined to Castell Carn Dochan Mine, near the beautiful lake of Bala (Llyn Tegid), on land belonging to Sir Watkyn W. Wynn, Bart.

"This mine is situated about five miles from Bala, on the north-west side of the turnpike road leading to Dolgelly, and about two miles from the village of Llanuwchllyn. There is one auriferous lode very remarkable. It runs nearly north-east and south-west and has a dip to the south. This lode is exposed to view for about twelve fathoms, showing specks of gold nearly the whole distance. The lode stuff is generally free from sulphides. The quartz, unlike Merioneth quartz, resembles that at Clunes, in Australia, and some boulders have been broken up and found to contain specks of visible gold throughout.

"The following returns of gold raised in Merionethshire were approximately correct up to the end of 1864:—

Tons.	Cwt.	Qrs.	Gold Quartz from	Ozs.	Dwt.	Grs.
1	4	0	River Mawddach yielded...	2	0	0
100	0	0	Alluvium ,, ...	5	0	0
5	0	0	Cefadwddwr ,, ...	8	0	0
5	1	3	Gwynfyaydd ,, ...	15	15	12
50	0	0	Cambrian ,, ...	30	0	0
20	0	0	Prince of Wales ,, ...	63	0	0
312	1	2	Dolfrwynog ,, ...	167	5	5
50	0	0	Clogan (prior to 1860) ,, ...	200	0	0
487	0	0	Cwmheisian ,, ...	334	0	0
1,982	8	1	Welsh Gold Co. ,, ...	666	6	2
3,500	0	0	Castell Carn Dochan ,, . .	1,606	0	0
5,140	0	0	Clogan (since 1860) ,, ...	11,850	0	0
11,652	14	6		14,947	6	19

Or an average of over 1¼ oz. of gold per ton."

The Gold Mines of Scotland.—The following remarks on the gold and gold fields of Scotland, are by Dr. W. Lauder Lindsay:—

"I propose giving, briefly, the principal results of my observations and inquiries at, and what I may safely denominate, the Crawford or Leadhills gold field, the whole of that moorland and hill region of the southern highlands—Upper Clydesdale,—the southern extremity of Lanarkshire, variously known as Crawford, or Crawford Moor, or Crawford Lindsay, which includes the district now known as the Leadhills, and forms the watershed of the four great southern rivers (the Clyde, Nith, Tweed and Annan,) has repeatedly, and in various ways, proved to be more or less auriferous. Long prior to the modern system of 'prospecting,' some of the Leadhill valleys were the scene of the far-famed alluvial washings, under Sir Bevis Bulmer in 1578-92, and it was from the produce of such washings that the Scottish Regalia were fashioned in 1542, and King James IV. and V. celebrated bonnet pieces coined. Bulmer's chief washings are said to have been in the Valley of the Elvan, and he is also represented as having washed the whole bed of the Glenganner water. But vestiges of ancient 'diggings' are to be met with in many parts of the Leadhills district.

"The Scottish gold fields may be divided geographically or topographically into three—the northern, central and southern.

"1. The northern comprises the greater part of the counties of Sutherland, Ross, Inverness and Argyle, north of the Caledonian Canal.

"2. The central lies between the Caledonian Canal and the Valley of the Tay; includes a great part of the shires of Inverness, Banff, Aberdeen, Kincardine, Perth, Forfar, Argyle, Stirling and Dumbarton.

"3. The southern comprises great part of Dumfries, Kircudbright, Wigton, Ayr, Selkirk, Peebles and Lanarkshire, and includes, more particularly, parts of the districts of Nithsdale, Annandale, Eskdale, Ettrickdale, Tweeddale and Clydesdale, and the Lammermuirs (in Haddington and Berwick). It is the smallest of the three areas, but it is the best known, and, so far as ascertained, the richest.

"At many localities throughout the area which I have assigned to the Scottish gold-fields, actual finds of gold have been made in recent or former times, and this is one of the strongest arguments for their thorough exploration.

"*Russia.*—In Siberia, native gold occurs in a hornstone at Schlangeberg or Zmeof, and Zmeino—Garsk in the Altai Mountains, accompanied with many other ores.

"The gold mine of Beresow in the Ural Mountains has long been known, consisting of partially-decomposed auriferous pyrites, disseminated in a vein of greasy quartz.

"About 1820, a very rich deposit of native gold was discovered on the eastern side of the Ural Mountains, disseminated at some yards deep in an argillaceous loam, and accompanied with the *débris* of rocks which usually compose the auriferous alluvial soils, such as greenstone, serpentine, peroxide of iron, corundum, &c. The rivers of this district possess auriferous sands.

"The quantity of gold raised in Russia during five years was as follows:—from 1847 to 1851 the amount of 7,646 poods, equal to about 296,932 lbs. troy, value at 80s. per oz., £14,252,536.

URAL, EASTERN AND WESTERN SIBERIA.

YEAR.	GOVERNMENT MINES.	PRIVATE MINES.	TOTAL.
	Ozs.	Ozs.	Ozs.
1860	111,984	665,986	767,870
1861	105,959	643,159	749,118
1862	102,857	640,885	752,742
			2,269,730

"The largest single production in 1860 was from the Aurora steam works, on the Ojne river, in the Jenisei district, viz., 54,020 oz., valued at £203,925 10s."

Our gold supply is dependent on gold mining as an industry which requires special knowledge and aptitude for the business. It appears that many gentlemen who take positions as directors of gold mines ignore the first principles of success which guide them in conducting their own businesses or professions. What would be thought of the manufacturers of woollen or cotton goods who employed for their managers men who had been brought up to the iron trade? Or the retail haberdasher or grocer who employed a drayman or cabdriver to manage their businesses? Would it be any wonder if they and their businesses soon came to grief? Then what else can be expected from defective management of gold mining, but failure. There are instances of companies which have gone in direct opposition to practical advice, apparently for no other reason but because that advice did not suit their fancy, or interfered with the pet theory of some very clever director who was desirous of experimenting in gold mining at the expense of other people. Of course, in most instances, these mushroom authorities and the mining companies at whose expense they have been experimenting, have come to grief, while the shareholders are left lamenting, to bewail their losses, and denounce gold mining, instead of their own egregious folly that led them to place their faith and their money under the guidance of mining nonentities.

There are two distinct and separate methods of conducting gold-mining operations. 1st. "Legitimate mining," which means working a mine to the best advantage for permanent profit and work. 2nd. "Illegitimate mining," which means working a mine for the purpose of market operations, or temporary profit to suit the purposes of interested parties who desire to raise or lower the price of shares at will. In legitimate mining, it is necessary that great care should be exercised in selecting a manager, who, if thoroughly competent, should be allowed to have considerable latitude in carrying out his own ideas of conducting his operations. As the success of the enterprize depends so much on his skill and judgment, he should not be thwarted in his ideas, nor, if possible, be cramped for means to carry them out. All profits from gold mining must come direct from the miner's pick and drill, and the results of the crushing mills, puddling machines, sluices, cradles, &c., and cannot be extenuated by shadowy promises or ridiculous reports; any given quantity of gold cannot be raised by artificial means beyond its absolute worth, an ounce or pound weight of gold will but coin into as many sovereigns or standard coins of the country in which the value and weights are regulated by law or custom.

According to the quality and quantity of matrix to be operated on, and the skill and judgment exercised in obtaining it from the mines, and the methods of extraction of the gold by the various processes, so will the profits of the undertakings be regulated,—and no amount of sophistry or argument will make a shilling extra profit if the matrix does not yield it.

Our gold supply must be regulated by, and be dependent on, the results of good or bad management. Having lately published some papers on gold mining and its management in the *Mining Journal*, a few extracts from them may not be out of place.

"The question of gold mining and its management is now occupying a large share of public attention, not only from disappointed shareholders in the mismanaged ventures that have within the past few years been brought before the public, but an appeal has been made to Parliament to have the history of the starting of the *furore* in Indian gold mining inquired into, with, of course, the natural result that nobody is to blame except those who have invested their hard coin in exchange for paper representing specified interest in certain sections of (in many instances) wild forest country supposed to be auriferous. It is not by a system of grandmotherly legislation or government interference that will cause gold mining and its management to be conducted on a basis of common sense, intelligence, economy and honesty. Gold mining, although, comparatively speaking, a new industry in so far as it relates to an established and well-recognized occupation of a large section of the most enterprizing men of the world who pushed forth into the wilds of America and Australia to develop the riches of the earth accidentally discovered, is an industry the practical and scientific knowledge of which has had to be acquired by experience and intelligent application,—and it is only those who have passed through the various phases of gold mining either in Australia or America, and practically acquired their knowledge where such knowledge can be best acquired, that can, with any degree of confidence, be safely entrusted with the expenditure of capital and labor for the economical development of gold mines.

Gold mining is a special business, and requires special knowledge and aptitude for its guidance, and when the management is in the hands of inexperienced persons generally ends in failure. They commence with a blunder, and keep on blundering until they gain experience at the expense of the unfortunate shareholders. By that time the mining operations have been muddled, and the capital frittered and wasted away, the shareholders become disheartened with their losses, and, consequently, disgusted at their efforts at gold mining. Thus it is, in consequence of inexperienced persons undertaking the control of an industry of which they know nothing, and refusing to be guided by the dictates of common sense, and the opinions of men who have an established reputation as experienced and practical authorities, that large sums of money become recklessly squandered in futile and spasmodic efforts at gold mining, which, being lost to the investor, creates distrust, and causes a stigma to be cast upon the industry.

Gold mining is, of itself, not only one of the most useful, honest and legitimate occupations which a man can follow, but it is the most profitable business in which capital can be judiciously invested, as can be shown by investigation. No other kind of occupation has given such wonderful results from its operations, either as direct profits to the producers of gold, or the immediate benefits conferred upon all classes who come within the influence of the results of its production, or that is at present paying such enormous profits upon the capital economically invested in gold mining, or that holds out such brilliant prospects for the future as can be obtained by the investment of capital in well-devised and judiciously-selected undertakings.

That there has been much capital and labor lost in legitimate gold mining, or in prospecting for gold, I readily admit and know by experience; but the greatest amount of losses of capital in connection with mining is by gambling or speculation in high-priced stock, paying fabulous sums of money for the right of prospecting for gold, misdirected labor and extravagant management. This has been fully exemplified both in America and Australia, where practical knowledge has been best obtained in those schools of experience.

Having been one of the early pioneers of gold mining in Victoria (Australia) since 1854, and gained a practical experience of the various phases of gold mining and its management in Ballarat, the most renowned gold field of the world, and having taken an active part in the development of the mining industry in that district and other parts of Australia, also having visited some of the principal African and American gold fields, I may, perhaps, be allowed to have had considerable experience on this subject, and, I trust, be able to offer a few remarks and comments on what may be considered one of the most important industries of the present day that will not altogether be uninteresting or unprofitable to those whose interest is that of the legitimate and profitable development of gold mining.

* * * * * * * *

As to the average quantity of gold per ton of quartz or matrix that can be made to pay for working, that must, in all cases, depend upon circumstances and good management. In Australia and America there are many instances where, with a large body of matrix, under favorable circumstances, such as plenty of water and wood, and efficient machinery, that ores of low grade, varying from 3 dwts. to 5 dwts,—say, 12s.

to 20s. per ton—pay very well, and realize good profits. As a few absolute facts are worth a lot of theory, I will give the results of some well-known companies now in operation that fully verify my statements.

Prof. J. Alden Smith, late State Geologist of Colorado, in his report on the mining development of that State for 1881-1882, as an illustration of what can be done in many places in the gold belt of Gilpin County, by working on an extensive scale the large bodies of ore too poor to be worked by the ordinary appliances, sets forth in full the returns and profits made by a few large mines now in work in the Black Hills, at Dakota. The statement from Superintendent, Mr. M'Masters, shows the yields, together with the cost of mining and milling, at different mines in the Black Hills. They embrace, as we understand it, the product of all the properties from the outset of their exploration up to the end of July, 1882. It appears that the Homestake Mining Company produced $4,367,180½, obtained from milling 684,733 tons of ore, averaging $6·37 per ton; the Highland Mining Company produced $1,175,632½, obtained from milling 234,081 tons of ore, averaging $5·02 per ton; the Deadwood Terra Mining Company produced $1,221,946½, obtained from milling 249,329 tons of ore, averaging $4·90 per ton; the Deadwood Mining Company, before consolidation with the Deadwood Terra Companies, produced $834,192¼; the Golden Terra Mining Company, before consolidation with Deadwood Terra Companies, produced $788,054½; the Giant and Old Abe Mining Companies produced, before consolidation with Homestake Company, $72,469⅓; and the Father de Smet Mining Company, from January, 1878, to August, 1882, produced $1,974,640⅓, obtained from milling 343,394 tons of ore, averaging $5·74 per ton, so that the total product was $10,434,116, obtained from milling 1,512,037 tons of ore, averaging $5·78 per ton.

In connection with the central enterprize of this group it is significant that up to December, 1879, the gross bullion yield of the Homestake Company was $1,051,265½; for January, 1880, $78,569⅔; February, $84,868¼; March, $90,159½; April, $104,281; May, $118,463⅓; June, $123,413; July, $128,769½; August, $144,980½; giving a total to September, 1880, of $1,924,769½. Thus, we see a steadily-increasing production, while Superintendent M'Masters is able to show that the cost of mining has diminished from $1·98 down to 89c. per ton, and the cost of milling from $1·59 down to 64c. in the 80-stamp mill, and from $1·22 down to 45c. in the 120-stamp mill. Further, the average gross yield of the ore to June, 1879, was $9·69 per ton. Since then it has been found of advantage to extract and mill all the rock between the walls of the veins. This has lowered the grade of the ore somewhat, but the gross amount milled has been increased in proportion, while the cost of mining has been correspondingly reduced. The yield of the ore from September, 1879, to February, 1880, varied from $4·25 to $5·60 per ton; since that date it has been increased by the ore of higher grade extracted from the 100-ft. level, and now averages $7·95 per ton.

From the dividend stand-point the showing is equally satisfactory:—

The Homestake paid 47 dividends, amounting to	$1,512,500
The Father de Smet paid 21 dividends, amounting to	$540,000
The Deadwood Terra paid 20 dividends, amounting to	$740,000
The Deadwood, before consolidation, paid dividends amounting to	$275,000
The Terra, before consolidation, paid dividends amounting to	$75,000
So that the dividends of the group were,	$3,142,500

Total assessments (or calls made) were $400,000. Now, when it is considered that it is only a few years since the Black Hills were in possession of that notorious Indian chief, "Sitting Bull," and his tribe of savage Indians, it is marvellous to see the rapid strides that have been made in expeditiously and profitably developing the resources of that auriferous district, and shows what can be done by good management. Much credit is due to Mr. M'Masters and the other superintendents who have so thoroughly developed their mines, and produced such highly-satisfactory results from a very moderate average gross yield of gold per ton, and fully illustrates the highly-profitable nature of gold mining in well-devized and well-conducted enterprizes.

To corroborate the views I have already expressed on this subject, nothing could have been more satisfactory to me than to read the letter in the *Mining Journal* from Mr. William Nicholas, F.G.S., M.E., Lecturer on Practical Mining at the Melbourne University, &c., a gentleman I have had the pleasure of knowing for many years, and who is a competent authority. His remarks, in reference to the Black Horse United Company, at Egerton, Victoria, are so timely, that I requote some of them here with pleasure—This Company, which has been at work many years, and in which I was an original shareholder, joins the well-known Egerton Mine, that has so successfully worked the reefs that I also assisted in developing in 1855, when, for want of machinery and water, an ounce of gold or more per ton was not deemed payable. As Mr. Nicholas truly says:—Economy in management is reduced to a science; the report of the directors shows that the Company mined and crushed for the half year 17,361 tons of stone, which yielded 2,801 ozs. 9 dwts. 12 grs. of gold—average 3 dwts. 5 grs. per ton,—realizing £11,245 19s. 4d.; which, to the balance of the previous half year, made the income £13,041 17s. 5d. As an instance of what good management and economy can do with low-grade ores the directors paid in dividends £3,250 for the half year, being 6s. 6d. per share, on 10,000 shares, or nearly one-fourth of the gross receipts of gold. The unassuming, but very practical, reports of the directors and mining manager of the above Company are an agreeable contrast to the ridiculous and bombastic effusions so often of late placed before the unfortunate shareholders of gold-mining companies in London, which, from their general tenor display extravagant expenditure and inexperience in all departments with bitter disappointment and despair as to future results under the regime. The Black Horse Mine possesses a large poor reef or vein, but with a first-class system of mining above and below, they can pay £500 per month, or £6,000 per annum in dividends. Now, as an illustration of my statements that there is no business so profitable as gold mining when the mines are well managed with efficient appliances and a fair body of matrix to operate on, I will take the case of the Black Horse Mine, which has been paying a profit of 50 per cent. on a capital of £12,750, by working quartz that has only averaged 3 dwts. per ton. Now, the advantages of gold mining are that, while the profits may be increased to an unlimited extent, according to the value of the ore, the cost and expenses of mining are not necessarily increased, or, at least, only to a slight extent. It may cost no more, or very little, to mine and crush quartz averaging 5 dwts. or more per ton, than it does stone only averaging 3 dwts. Thus, on quartz from that mine averaging 3 dwts. or 12s. per ton, the profits are, say, £6,000 per annum. Now, assuming that 35,000 tons are raised and crushed at their 52-stamp mill, averaging 4 dwts., an increase of 1 dwt. only, the profits would be increased by £7,000, or giving a total profit of about £13,000, or over 100 per cent. on the original capital of the Company, £12,750, and a progressive increased yield of gold, as under, would show the following results.

The ore to be crushed is taken at 35,000 tons per annum; the average yield at per ton; the value at 80s. per oz.; the cost is that of mining and milling; the profits are the annual profits; and the interest is on the original capital approximately, and at per annum:—

AVERAGE YIELD.	VALUE OF GOLD.	COST OF MINING, &c.	PROFITS.	RATE OF INTEREST.
4 dwts.	£28,000	£16,000	£12,000	100
5 ,,	35,000	17,000	18,000	150
6 ,,	42,000	18,000	24,000	200
7 ,,	49,000	19,000	30,000	250
8 ,,	56,000	20,000	36,000	300
9 ,,	63,000	20,000	43,000	350
10 ,,	70,000	20,000	50,000	400
11 ,,	77,000	20,000	57,000	450
12 ,,	84,000	20,000	64,000	500
13 ,,	91,000	20,000	71,000	550
14 ,,	98,000	20,000	78,000	600
15 ,,	105,000	20,000	85,000	650
20 ,, 1 oz.	140,000	20,000	120,000	900

In the above table I have allowed a fairly-wide margin for the variation of costs for mining and milling from £16,000 to £20,000, which may, I think, be deemed ample. The foregoing represents the profitable nature of gold mining in Victoria, and the ratio of increasing profits as the yield of gold from the quartz increases. The mine has already repaid the capital over five times. As an illustration of the difference in yields and value of gold mines adjoining each other and on the same lodes may be shown as between the Black Horse Mine and the Egerton Mine. While the former has only paid about £70,000 in dividends, the Egerton Company has, since its purchase from Mr. Learmonth for £15,000 a few years since, paid about one quarter of a-million sterling in dividends, and, probably, not much less to the many former owners of claims from the time of its opening in 1855, as the main lode in many places and many of the small veins were very rich.

Many other well-managed mines in Victoria might be instanced where, with moderate yields combined with economical and good management, large quantities of low grade or very moderate quartz and alluvial have been, and are now, worked at a profit. The Black Hill Company, the Llanberis Company, the New Kohinoor, the Band and Albion Consols and others on Ballarat. The Port Phillip and Clunes Company, the New North Clunes Company, and others at Clunes, the latter having paid about half-a-million sterling on an original capital of £37,008; while the Port Phillip and Clunes Company have raised gold from their mines to the value of £1,625,529, and paid in dividends and royalties £366,166, as shown in reports, June, 1879; since then the average yield has been reduced and the profits proportionately less. Both these mines have been well-managed from the first, and, in fact, generally held as models for others to follow. The Clunes Consols, north of and adjoining the New North Clunes Company, is an instance of a well-managed, but, as yet, very unsuccessful mine. This Company has been working for the past fifteen years, sinking to a great depth and driving long distances at various levels to strike a continuation of the lodes as worked by the former companies so successfully, but, as yet, have found no payable quartz. Their expenditure has been, I believe, not much less than £75,000 to £100,000 in real prospecting. Should this mine prove an ultimate failure, the work done may be regarded as legitimate mining. At Stawell (Pleasant Creek) are some extensive mining properties that have been well managed and proved profitable, such as the Pleasant Creek, North Cross Reef, to which, on a capital of

£21,250, have been paid in dividends about £800,000. There are other companies with less, but very favorable, results, while many companies near the crown of the reef have been highly successful. A great deal of money has also been spent in, as yet, fruitless prospecting, but may, probably, be successful; the Magdala Company, for instance, having sunk to a depth of over 2,000 ft. (the deepest shaft in Australia) without striking the cross reef or any other payable stone, and have been steadily plodding on for the last fourteen years. In the Gipps Land district the most notable instance of success has been the Long Tunnel Company, Walhalla, which, on an original capital of £12,000, has paid upwards of £800,000 in dividends. Many other mines in the district have also been worked with great profit.

Although economical mining management has been reduced to a science in Australia and America, in many of the large and well-regulated companies, the knowledge of this science was not acquired all at once, but has been the result of practical experience and intelligent application, as to what were the requirements of the gold mining industry to enable mines to be worked efficiently and profitably when the matrix contained only a low average per ton. As was naturally to be expected, the various details of a novel industry like gold mining were not mastered in a hurry, for as the gold fields developed, and the sinking of shafts on alluvial leads or quartz lodes got deeper, and the nature of the mining operations became more difficult, so did it become necessary to improve the appliances for working, and the method of conducting its operations. Ballarat, the great gold field of Victoria, and the most famous field of enterprize ever known, was the best practical school wherein to acquire a thorough knowledge of the various phases of difficult mining operations. Those who have passed through the different stages of gold mining as they developed themselves on that field, were enabled to acquire a more practical and intimate knowledge of mining necessary to carry on mining works with economy than could be acquired on other fields. More experienced mining managers and miners received their training there than elsewhere, as it gave a wider field for gaining experience.

One of the greatest requirements for the aid and development of legitimate mining on many gold fields (especially in Australia) is more efficient mining machinery to facilitate the economic raising and reduction of ores, and separation of minerals. There are many gold fields where it would be more advantageous to capitalists to encourage the skill and experience of the operative miner than merely to rely on labor only. A more judicious combination of capital and labor would, in many places, be the means of opening up mines and developing districts now lying comparatively idle which could be profitably worked if the operative miners could be supplied with machinery and appliances on fair and equitable terms. Thus, there are many who would, if they had a prospective interest in a mine, be able to work for months in developing its resources for their ultimate benefit, who could not do so if they had to pay down a large sum of money to purchase machinery to commence their operations with.

In Australia, some years since, I proposed and advocated the establishing of an institution with ample capital for the purpose of supplying co-operative parties of miners and mining companies with machinery, also to erect quartz crushing batteries where sufficient inducement offered. The company would not risk its capital in unprofitable labor, the working of the mines being undertaken by the companies or co-operative parties of miners, who, having a local knowledge of the mines and districts in which they were working, would be able to utilize their experience and labor with better effect.

The company would retain possession of the machinery supplied, and its profits would arise from the royalties or percentage on the gross yield of gold from the mines so supplied and the earnings of crushing or smelting mills. Such a company as this offers facilities and inducements for investment of capital that other monetary institutions can seldom offer ; its fields of operations are practically unlimited with every probability of success beyond ordinary calculations.

Companies established on such a basis would supply a great want in many mining districts, would materially aid the development of mining, create additional wealth, and largely extend the industries of the colonies, and would contain the elements of success with little risk of loss under good management. Such a company or companies could be the means of putting thousands of miners into profitable work, restoring to active life districts that are now almost desolate, thereby creating a demand for all other kinds of labor, by constantly increasing the supply of new gold.

In my work, "Gold Mining: its Results and its Requirements," published in Melbourne, 1875, I specially advocated the adoption of such a policy in Victoria, and said as follows :—

"I will here illustrate the probable advantages that may be fairly anticipated to result from the operations of such a company. Supposing it started with a capital of £100,000, and supplies machinery to fifty different companies at an average cost of £2,000 each, that the terms with the various tributing companies in the aggregate are ten per cent. on the gross yield of gold, and that each tributing company employs 30 men on the average, that the returns from the mines should average 30 ozs. per week, or 1,500 ozs. in the aggregate, the result would be shown thus, reckoning 50 weeks in the year :—

To yield of gold from 50 companies employing 30 men each, yielding 30 ozs. per company, weekly result 1,500 ozs., or 75,000 ozs. per annum		£300,000
10 Per cent. on the gross yield (for company)		£30,000
Loss by wear and tear, say 5 per cent. on capital invested	£5,000	
Manager, engineer, clerks, board, fees, &c.	2,000	
Incidental travelling expenses, &c.	3,000	
		10,000
Estimated profits for company		£20,000

Or 20 per cent. on the capital.

The working miners' account would stand as follows :—

To total gold raised, say	£300,000
Deduct 10 per cent. on gross yield for machinery	30,000
Balance	£270,000
20 per cent. for expenses of material, tools, &c.	54,000
	£216,000
Wages for 1,500 miners at £2 5s. per week	175,500
Balance of profit to the miners beyond the ordinary wage rate, or, say, 23 per cent. on their capital—or a wage of £2 15s. 4½d. per week	£40,500

In the foregoing statement the averages taken are at a low estimate, and the probabilities are the return would be greater than that stated. I will, therefore, show another estimate, although more liberal, there is every probability of its being fully realized. Thus, suppose 50 companies, 40 men to a company, supplied with machinery, produce 50 ozs. weekly per company, and the average percentages be 12½ per cent. on the gross yield, will show thus :—

To yield of gold from 50 companies, employing 40 men, at 50 ozs. per company weekly, 125,000 ozs. per annum =		£500,000
By 12½ per cent. on gross yield (for machinery company)		62,500
,, Wear and tear 5 per cent. on capital	£5,000	
,, Management and expenses	7,500	
		12,500
Estimated profits for company		£50,000

Or 50 per cent. on the capital.

The working shareholders' account would stand thus :—

To total yield of gold	£500,000
By 12½ per cent. on gross yield for machinery	62,500
Balance	£437,500
Deduct 20 per cent. for expenses of material	87,500
	£350,000
Wages for 2,000 miners at £2 5s. per week	234,000
Balance of profit to the miners beyond the ordinary wage rate, or, say, 50 per cent. on their capital of labor, or giving a weekly wage of £3 7s. 3d. per man	£116,000

I will show another estimate, with a little higher average yield. Thus, supposing the company to furnish 40 companies, at an average cost of £2,500 each for machinery, that 50 men be employed by each company, that they produce 85 ozs. per claim weekly, and the average percentage be 15 per cent. on the gross yield, will show as follows :—

To yield of gold from 40 companies, 50 men per company, at 85 ozs. per company, weekly 170,000 ozs., or per annum		£680,000
By 15 per cent. on gross yield (for machinery company)		£102,000
,, Loss on wear and tear, 7½ per cent. on capital	£7,500	
,, Management and expenses	7,500	15,000
Estimated profits (machinery company)		£87,000

Or 87 per cent. on capital.

The working shareholders' account under this estimate would show thus :—

To total yield of gold yearly	£680,000
By 15 per cent. on gross yield for machinery	102,000
Balance for mines' account	£578,000
Deduct 20 per cent. for expenses of material	115,600
	£462,400
Wages for 2,000 men at £2 5s. weekly	234,000
Balance of profit to the miners beyond the ordinary wage rate, or, say, nearly 100 per cent. on their capital of labor, or giving a wage of about £4 9s. per man, per week	£228,400

Although the profits, as shown by the foregoing calculations, may appear large, it is not an extravagant estimate, and would, in all probability, be often exceeded; however, taking the lowest estimate, which is put at a low figure, it is sufficient to show that, with judicious management, a company established on the basis I have described could hardly fail of being a great success. A great advantage both to the capitalists and operative miners would be that their capital and labor would not be frittered away through want of appliances or a definite system of working, nor would their operations be subject to the influences of the share market.

I have entered into particulars in the foregoing statements to give a fair explanation to those who are not practically acquainted with the details of mining to prove that, under ordinary circumstances, a good-sized claim with a moderate quantity of matrix to operate on, containing a low average yield per ton, can, under careful direction, be made highly remunerative to both capitalists and miners; and, as a further explanation of the profitable nature of legitimate mining, I will show the probable operations of one company, with a fair quantity of quartz to work on. Thus, suppose the company furnishes engines, boilers, battery of fifteen heads of stampers, &c., at a cost of, say, £2,000, to a mine where 30 miners are employed, and the rates of percentage vary with the yield of gold, and that the miners raise and crush 300 tons per fortnight, the following would be the result:—

Tons of Quartz Fortnightly.	Average Yield of Gold per Ton.	Total Ozs. of Gold.	Value Sterling at 80/- per Oz.	Rates of Percentage on the Gross Yield.	The Tributors' or Working Miners' Share.	Machinery Company's Share Fortnightly.	The Company's Yearly Profit.	Cost of Management, &c., to be Deducted.	Interest on Capital. Per Cent. per Annum.
	Dwts.	Ozs.	£	Per Cent.	£	£	£	£	Per Cent.
300	2	30	120	10	108	12	312	112	10
300	3	45	180	15	153	27	702	202	25
300	4	60	240	17½	198	42	1,092	292	40
300	5	75	300	20	240	60	1,560	360	60
300	6	90	360	25	270	90	*2,250	450	90
300	7	105	420	25	315	105	*2,625	425	110

I do not expect that the low yield of two dwts. per ton can be worked with a profit of full wages to the working miners, but after allowing £18 a fortnight for timber and other expenses, it leaves £3 per fortnight per man for wages. Anything from two-and-a-half

---

*Reckoning only 25 fortnights in the year, allowing one for repairs, &c. (The above figures are given as approximately).

to three dwts. per ton, with a fair supply of matrix to operate (and a supply of timber and water reasonably obtained) can be worked profitably for both miners and capitalists, and there are all the chances of an increased yield of gold, as also the probabilities of an increase in the supply of quartz or other matrix. Generally speaking, when the stone is very poor, it is greater in quantity, and the probabilities are, that with two dwts. stone 400 tons could be raised and crushed in a fortnight. If so, it can be profitably worked. Many mining companies have already proved that this low average yield of gold per ton of matrix can be worked with advantage.

I respectfully invite the consideration of capitalists and all interested in the "Supply of Gold" to examine these figures, and see if any other business in financial companies can offer, with any reasonable prospect of success, such wonderful chances of profit as does gold mining, even when calculated on so low a basis as my estimates are framed.

I am aware that some may argue thus:—"Oh, it is all very well to put down those figures, but what guarantee have we that the miners will raise the quantity of quartz estimated?" None whatever; but if they only raise a much less quantity it will pay very well for both parties; and, besides, it must be considered that some of the mines so worked may be exceptionally rich.

Taking the general average results of the various gold fields now in operation, or that have been partially developed, in Australia and America, there is a vast field for future enterprise in gold mining, with every reasonable prospect of success attendant on legitimate mining operations. Whether this be done entirely by the individual capitalists or joint-stock companies, carrying out works under their immediate supervision, or whether it be partially done by the judicious organization of capital and labor, in the form of tribute parties of operative miners working mines, the machinery and appliances for working which have been supplied by the capitalists, there is practically an unlimited field for the profitable employment of both capital and labor.

Illegitimate gold mining means the entering into mining undertakings with the view of making a large profit out of the floating of a company on the market, without any regard as to the future results of the mine or the method of its management. This is generally done by a combination of enthusiastic financiers, who, as a rule, not having any practical knowledge of gold mining, are misled as to the value of gold mines by fanciful reports, based on suppositions and theories that will not stand the test of practical experience. The large sums of money lost in the Indian and African ventures have been through such methods of entering into mining. These losses have been disastrous in their results not only to the unfortunate shareholders who were induced to invest their money on the faith of such shadowy promises, as set forth in prospectuses and reports, but the results have been to cast a stigma on the gold mining industry wholly undeserved.

In Australia and America gold mining, or the production of gold and silver, is an established and profitable industry, is recognized as such, and conducted on business principles, and not made a plaything of for financial operators to the extent done in England.

Had the mines of India and Africa been taken only for what they were, purely prospective mines, or of no recognised value, in consequence of none or little development work being done, and bought at a price commensurate with the prospect, there would have been but little money lost in the undertakings if the development work had been economically carried out.

The great mistake made was, that enthusiastic promoters, directors and amateur managers rushed into extravagant purchases of properties, the value of which were unknown to them, and commenced an elaborate and costly system of mining and extravagant purchases of machinery before the mines were prospected or sufficiently developed to justify such unreasonable costs. Then, again, machinery of the most useless description has been purchased and dispatched to the mines, some of it left upon the roads, and much of it when erected being either defective in principle or wholly unsuited to the work required. Through ignorance of the first principles and the requirements of gold mining, sheer folly and reckless extravagance in the purchase of machinery and stores, the general management of the works, and the injudicious appointment of officers, the mines of India and Africa have mostly ended in a miserable failure, which, in the minds of many, has thrown discredit on gold mining generally; instead of doing so in reality, it only proves that gold mining is a business requiring experience, skill and honesty for its management in the place of incapacity, extravagance and dishonesty.

What are termed losses in mining are more imaginary than real. Speculation in high-priced or inflated Stock above the legitimate value of a mine must, as a natural consequence, end in loss. So also with mines under defective management and extravagant expenditure, in paying for the privileges of prospecting for gold, they also will surely come to grief.

I have occasionally drawn attention to the deplorable waste of capital and labor in gold mining through the assumption of knowledge by amateurs who imagine themselves competent to advise on the investment of capital in gold mining or the management of mines. Their excited and fanciful imagination leads them and their friends, who are foolish enough to be guided by their judgment, into error and serious losses, for which the mining industry gets blamed, instead of the reckless indiscretion of the adviser and advised.

VALUEING MINES.

The value of a gold mining property may be appraised by competent authorities in such a manner as to prevent any great loss on the investment, although no set rule can be laid down to guide men's judgment as to their estimate. I hold it as a safe rule not to value a gold mine at more than from two to five years' purchase; thus, taking a mine well developed and paying good average dividends, according to the nature of the matrix operated on; for the mine to be worth three years' purchase it is necessary that there should be not less than five years' work in sight of a similar quality of ore, or the lodes so opened that it affords a presumption that such a quantity of matrix can be obtained. For a mine to be worth a five years' purchase, it means also that there shall be a proportionate amount of ore in sight, or that in all presumption with reasonable development it will give eight to ten years' work. Investment in gold mines should be regulated by the fairly probable results of yields, and twenty per cent. is not too high a return to be anticipated from a well-developed gold mine.

Mines vary so much at times in value and yield that the investor has a right to the chances of improved prospects as may arise, just as he is liable to the reverse by loss. It is not only necessary that an investor should get a return of his capital in from two to five years, according to the position of the mine and the extent of its operations, but there should be every reasonable presumption from the progressive work and general features of the mine that it will continue to pay an equal rate of profit for a similar period certainly, and with fair hopes of a continuation of profitable returns by future development.

Although a mine may be opened, and so far prospectively developed as in all human foresight to show several years' profitable work beforehand, it is impossible to say, with certainty, what the yields will be; it can only be surmised and judged of from practical observations and experience. There are so many vicissitudes in gold mining, as in other mining—such as the ore getting poorer, the lodes pinching out, getting small or into hard country, with increased depths increased difficulties arise, and with liabilities to flooding out or other contingencies it is advisable for investors to keep within a safe margin and only invest where they can rely on matured judgment for advice. In the wild excitement of share-dealing or mining manias, and by the manipulation of the market by interested persons, shares are often rushed up to ten, fifteen or twenty years' purchase. That, of course, is pure gambling—it is not legitimate speculation or investment.

Managers, directors, shareholders and experienced miners oftentimes get wedded to, or infatuated with, a mine they are particularly interested in, the delusion over-riding their common-sense judgment. As an illustration,—A manager of a well-known mine in Ballarat, some years since, was boasting of the value of the Stock, which was then at £180 per share, and saying they would soon be up to £300. I told him the shares were then beyond their worth, and proved it to him on the testimony of his own estimates of the probable yields and expenses of the mine. When the result was put in plain figures it showed to him the mine was then standing at seven years' purchase. (And, as after events proved, did not last as a dividend mine seven years.) He was somewhat astonished at the result, and replied, "Oh, it will never do to value mines that way;" but, as a practical miner of now 30 years' experience, I unhesitatingly assert that this is the only way to value a mining property, and, that, under ordinary circumstances, a five years' purchase is quite enough for any one to go to. This standard of limits necessitates basing the calculations of valuation for eight to ten years in advance, which is generally quite long enough for any one to estimate.

The valuation of progressive mines or new prospecting mines can only be estimated by their prospective advantages from surrounding indications, which local knowledge and practical experience can best determine. It is absurd to give fancy and ridiculously high prices for progressive mines, as they are all subject to many drawbacks and disappointments; mines that are often considered great certainties of being good ultimately prove failures, while those looked at with indifference prove to be highly successful—the proof lies in the working.

Wherever the works of a progressive mine have been substantially and economically carried out, the claim standing in a good position, with an area of ground in proportion to the natural features of the mining operations, the value of the mine should be at least a fair and reasonable profit upon the cost.

It is in the development of progressive or prospecting mines that the best field for legitimate speculation is offered. If investors would take no greater interest than they are able to carry on, and be content to abide the results of legitimate work, instead of devoting their minds and energies to market quotations (that being no true indication of the value of a mine), they would in most cases derive more satisfactory results from the enterprize.

There can be no absolute standard of valueing progressive mines—that must be left to people's fancies, private knowledge or judgment. The main questions to consider are:—Has the company a reasonable-sized area of ground to make a mine? Does it stand a fair chance of the "lead" or "lode?" Is it purely a new "lead or lode" they are prospecting for? The chances of success can only be derived from practical experience and local knowledge.

PROSPECTING QUARTZ LODES.

If this be in a new district when the lodes may have been discovered by an outcrop of quartz, or by trenching across a hill, or by tunnelling into a hill, and where not proved to any depth, it would be unwise to run into a great expense for machinery and appliances until the lode had been proved to be payable and likely to be permanent. This can be done generally at a moderate expense by practical miners.

When a lode has been proved by one or more prospecting shafts or tunnels to be continuous or permanent, and the prospects by trial crushings, if fair average samples of the quartz be deemed satisfactory, then steps should be taken for systematic development. If it be a vertical lode, a shaft or shafts may be sunk on the lode, and the levels opened out on the course of the lode at distances of from 50 to 60 ft., or as the mining manager may deem most desirable. Where the reef has an underlay to any great extent, sinking on the lode is generally adopted so far as practicable. But when a mine is likely to develop into extensive workings and the operations intended to be carried on to great depths, then after it has been sufficiently developed to prove the lode a true fissure vein, the main shaft and surface works should be laid out in a manner commensurate with the magnitude of future operations, with a view of ultimately sinking the shaft to a depth of over 2,000 ft. With this object in view the shaft should be, if possible, vertical, and of ample size to give accommodation for not less than two compartments for haulage, and one for pumps and ladder way. It is a great mistake to persevere in carrying down small shafts to great depths, merely because they were so started from the surface. For instance, a shaft, say, six or seven feet in length by three feet to four feet in width, may answer very well for depths from 300 to 500 ft., but when found desirable to sink much beyond that depth it would be better to either enlarge the size of the old shaft or sink a new one of larger dimensions, than to be hampered with the inconveniences of a small shaft when down at great depths. The profits of a mine will depend on the facilities of a rapid output of ore; and with ample shaft room and haulage or hoisting power, ores of lower grade can be worked with profit that, under other circumstances, would have to be left underground.

It is in the practice of economy in time and money in prospecting a mine, and the designing and laying out of works for future development with the erection of suitable machinery and appliances for the mining, raising and milling of ores, that mines with moderate quality or low-grade ores have to depend for profitable working. One consideration should be borne in mind that the progressive or development work should always be kept well ahead of the stoping or blocking-out ground, and ample reserves of ore ground be kept opened up ready for operating on. Where a mine is worked upon this principle, its value and supply of ore can be steadily maintained and increased as desired without being subject to fluctuations or sudden depreciation in value or yields, unless there be a diminution in the average yields of gold from the ore or matrix.

In the selection of sites for shafts, tunnels or machinery, care should be taken to choose such positions that will afford most convenience, and where the least amount of dead work will be necessary for economical working. It is not desirable to be too extravagant in the erection of more machinery than can be profitably utilized, thus, in putting up a stamp mill for crushing it is better to keep a ten or twenty head battery in full work than to have mills of double the capacity only partially employed; when the yields and prospects of a mine have fully warranted the extension of machinery it is very easy to make additions as may be required.

The great mistake that many companies have made, and do make, is in squandering too much capital in ornamental, or useless surface works and expensive management instead of practical explorations underground, where the profits have to come from.

Alluvial mines, or the working of auriferous gravels, drifts, clay, cement, or other matrix containing gold may be in the form of surface workings, or terraces of gravel wash along riversides or underground rivers or ancient water-courses, more generally known as leads or gutters, overlaid by deposits of clay, drifts, basaltic rock, &c., the accumulation of ages. If the gravel or wash dirt be on the surface or in hills affording a chance of fall for *débris*, it may be worked by sluicing either with box or ground sluicing, or (where a pressure of water can be got to bear) by hydraulicing.

Where the leads or gutters are deep under the surface, as in the Ballarat district and many other places in the Australian colonies, the direction or trend of the deep ground is now mostly ascertained by boring (but formerly had to be guessed at or proved by sinking) having ascertained the trend or position of the deep ground, a main shaft is at once to be commenced, and all the appliances necessary for prosecuting the work must be provided at the first. Thus, if the depth of the alluvial wash is, say, from 300 to 600 ft. in depth, then arrangements must be made as local and practical knowledge can best determine. Where the water in the rocks and drifts is heavy, large pumping engines and pumps will be required to be provided and to be erected while the shaft is in process of sinking from the surface, so as to be ready for action when water is struck. Many of the mines in that district require pumps from twelve inches to eighteen inches in diameter, and which are generally kept in constant work. The size of shafts suitable for such work vary from nine feet to twelve feet in length by three feet six inches to five feet in width, with three or four compartments. Many alluvial mines in the Ballarat district will raise from 500 to 1,000 tons of washdirt and *débris* in the day of 24 hours from the shaft. To do such an amount of work requires a good system of management, with judgment and regularity of laying out work. Tunnels, into and through hills intersecting or cross cutting quartz lodes, where they can be carried out to advantage, will be found the most economical system of working mines. The difficulties of initiating schemes for carrying out great enterprizes of this kind arise mostly from the conflicting interests of mine owners along the route, or proposed route of tunnel, but where these can be reconciled either by purchase, amalgamation or agreement, then the system of tunnelling through, or cross cutting, mineralized sections of country will be found the best as a rule.

As an instance of the profitable nature of tunnel mining, I will instance the estimate of the present cost of mining and milling of ores in Gilpin County, Colorado, and the difference estimated by carrying out the proposed tunnel for about four miles in length to intersect and cut through the numerous lines of quartz lodes on its route, Professor J. Alden Smith, says:—

"The history of Colorado had its beginning here, and from it all the other sections have taken their most instructive lessons in mining and milling.

* * * * * * * *

To all depths thus far penetrated the quantity and quality of ore remains near the old standard. The average assay value of the stamp rock, as indicated by the results of some thousands of assays by the writer and others during the past eighteen years, is about one ounce, or $20 per ton in gold, and not far from six ounces silver. The average amount extracted by the stamp mills proper, from the best information obtainable, is about 60 per cent. of the gold and seven per cent. of the silver, or about $12·50 per ton (coin). The silver saved is only that which is in alloy with the gold, and the per cent. varies quite perceptibly in the ores of different mines. There is a further saving by concentrating the tailings from the stamp mills equal to about one dollar per ton, average for the crush material, at the prices generally paid for the concentrates during the past seven years. This gives a total average yield of $13·50 (coin) per ton, or about 73 per cent. of the assay value. From a few of the mines a much higher per cent. is saved, and from others less, but I am convinced that the above is very near the general average. From the nature of the ore, it being very heavy in sulphurets, it is scarcely possible to obtain much better results from the present stamping process.

" The sulphuret or smelting product, comprising the sulphides of iron, zinc, copper, lead, &c., is usually separated from the stamp rock by hand picking, and then sold for smelting. The average assay value of this class of ore, as shown by the practical results of twelve years' continuous operation, is about $100 (coin) per ton. Delivered at the smelters, the producer receives from $70 to to $74 net per ton. At the present cost of labor, fuel, freights, &c., this is regarded as very fair, and even liberal compensation.

* * * * * * * *

" I am averse to dismissing this subject without elaborating certain facts and opinions respecting the future progress of this splendid mineral-bearing zone already touched upon. In consideration of the fact that many of its mines have been sunk to depths where hoisting and pumping have become very expensive, and that in addition to the available grades of ore there are immense quantities too lean for profitable handling, which carry only one to two ounces of gold per cord (seven tons), yet still sufficiently rich to yield a fair profit under more favorable conditions; it seems to me that the time has arrived when a project should be devized for the largest practical utilization of this now, to all intents and purposes, waste product. I am fully satisfied that a tunnel from some feasible point on South Clear Creek would do more towards the solution of the problem than any other enterprize that can be instituted at this time. Under capable management it may be made a profitable investment for the amount of capital required for its completion, and the benefits to the mining interests would be almost incalculable.

The end in view would be best accomplished, and with least expense, by starting at some desirable point between Idaho Springs and Fall River, and running directly under the principal lodes of Belleview, Quartz, Prize and Winnebago Hills. It would then cut all the important groups heretofore mentioned, at vertical depths, ranging between 900 and 2,000 ft. and on their dips from 1,200 to 3,000 ft., effectually draining them to those depths, and doing away with the heavy expense of pumps and the power to operate them. The tunnel would be of sufficient dimensions to admit of a double track, with waterway beneath and the passage of underground locomotives for the conveyance of ores to mills containing from 100 to 200 stamps each, located on South Clear Creek, near the mouth of the tunnel. They could be operated by water power eight to nine months in the year, thus materially reducing the cost of crushing.

"The present cost of mining, hauling and milling stamp rock, according to the voluminous notes I have collected, is about $35 per cord (seven tons) average, or $5 per ton, distributed as follows :—

	PER CORD.	PER TON.
Breaking and passing ore to shaft	$9·00	$1·30
Hoisting and pumping	6·13	87
Hauling to mills	7·87	1·12
Crushing in Custom mills	12·00	1·71
	$35·00	$5·00

"What is termed "two ounce stamp dirt"—containing two ounces gold per cord—yields about the following average :—

Two ozs. gold retort, value $17 per oz.	$34·00
Half-ton concentrated tailings, @ $5 per ton	2·50
	$36,50

"It will be seen that this leaves a margin of only $1·50 per cord, or 21 cents per ton, on two ounce rock, too little to make it an object to mine and reduce it.

"Now let us see what reductions may be made with a tunnel as suggested, and large water-power mills contiguous to its outlet:—

	PER CORD.	PER TON.
Breaking and passing ore to cars, 10 per cent.	$ 90	$ 13
Hoisting and pumping above tunnel level, 90 per cent.	5·52	79
Hauling to mills	84	12
Crushing	6·00	86
	$13·26	$1·90

"This would effect a saving of nearly 38 per cent., and leave a margin of profit:—

	PER CORD.	PER TON.
On two-ounce ore	$ 14·76	$ 2·10
On one-and-a-half ounce ore	6·26	89

"It is, therefore, quite clear, that if by the use of improved devices and appliances we can reduce the cost of mining to 89 cents per ton, and the cost of crushing to 45 cents, as is now accomplished in the Black Hills of Dakota, according to the certified statement, we should realize of $3·12 per cord, or

44 cents per ton, from ore containing only one ounce, and still allow $7 per cord, or $1 per ton, for conveyance out of the tunnel, which would be a very liberal tariff.

* * * * * * * *

"It is estimated that 1,000 tons at least of one to two-and-a-half ounce ore, averaging, say, one-and-a-half ounces, could be produced daily from mines already developed along the course of the proposed tunnel. This would provide employment for not less than 1,000 men, besides adding more than $1,000,000 annually to the general product, from material, which, without the aid of some such enterprize, must remain in the mines and the waste dumps. It is from these grades that the country must, in the near future, derive a large proportion of its bullion returns, and the sooner some enterprize is inaugurated to this end, the sooner its internal condition will be materially improved."

Our Gold Supply will be maintained and permanently increased by the initiation and carrying out such schemes as above, that have for their object the economical mining and milling of gold ores. In most gold mining districts, millions of tons of low grade ores can be worked to advantage, where efficient drainage and machinery power for raising, transport and reduction of ores can be introduced. To those who have the foresight, intelligence and courage to design and execute great public works of the utility of those tunnels now in operation and proposed to be executed, and other such schemes for economical and profitable gold mining, the mining interest will be not only indebted, but all other industries incidental thereto.

With intelligent and well-matured schemes of enterprize, under the supervision of practical and experienced persons, gold-mining, or the profitable production of gold, may be removed from the sphere of doubt and loss into the realms of certainty and profit.

Taking the actual returns of gold for the year 1882 from America and Australia, the chief gold-producing countries which publish statistics of their yields, it will be seen that the United States of America produces £6,038,671 in gold, whilst the Australian Colonies and New Zealand produced £5,349,428, or a total of £11,388,099. The production of silver in the United States of America amounted to $50,155,283, or say, £10,031,054.

Total production of gold and silver for the year 1882 in the United States of America :—

Gold		$30,193,355,	say,	£6,038,671
Silver		$50,155,283,	say,	£10,031,056
Totals		$80,348,638,	say,	£16,069,727
Victoria	Gold	£3,458,440		
New South Wales....	,,	561,876		
Queensland	,,	334,557		
New Zealand	,,	994,555		
				5,349,428
				£21,419,155

Although the lists of dividends from the various public companies and private owners who produced the above new wealth are not attainable, it may be fairly estimated that about one-third to one-fourth of the amount was paid in dividends. In Victoria, during the year 1882, the registered Gold Mining Companies alone paid nearly double the amount in dividends of all other public companies in the Colony, including banks, insurance, trading, gas, and manufacturing companies. From the gross yield of gold for the year, £3,458,440, the dividends from the public companies and private owners may be estimated at about £1,000,000.

As a further illustration of the profits of gold and silver mining, I quote a list of a few of the mines now in operation in the United States of America which have paid in dividends upwards of £20,000. The statements are from a list lately published in the New York *Mining Record*, and do not account for a large number of mines worked privately, or for companies whose returns are not given :—

Name of Company and Location.	Dividends Paid.
Alice Gold and Silver Mining Co., Montana ...	$ 450,000
Amie. Con.	330,000
Bassick Mining Co., Colorado	425,000
Black Bear Quartz Gold Mining Co., California	887,000
Boston and Montana Gold Mining Co., Montana	310,000
Bodie Con. Mining Co., California	1,570,000
Bulwer Con. Mining Co., California	175,000
Bonanza King Con. Mining Co., California ...	150,000
Consolidated Gold Mining Co., Georgia ...	110,000
Contention Company, Arizona	1,250,000
Crescent Mining Co., Utah	150,000
Deadwood Terra Mining Co., Black Hills ...	900,000
The Deadwood previously paid $275,000	350,000
The Terra 75,000	
Dunkin Mining Co., Colorado	210,212
Evening Star Mining Co., Colorado	1,400,000

Name of Company and Location.	Dividends Paid.
Eureka Con. Silver Mining Co., Nevada ...	4,817,500
Father de Smet Con. Gold Mining Co., Dakota	820,000
Grand Central Mining Co., Tombstone, Arizona	800,000
Hecla Con. Mining Con., Montana	657,500
Homestake Mining Co., Deadwood, Dakota ...	2,412,500
Horn Silver Mining Co., Utah	3,700,000
Hope Mining Co., Montana	146,947
Idaho Gold Mining Co. (Grass Valley), California	3,504,550
Indian Queen Mining Co., Nevada	374,000
Iron Silver Mining Co., Colorado	1,300,000
Jocuistita Mining Co., Mexico	1,050,000
Kentuck Mining Co., Nevada	1,297,000
La Plata Mining and Smelting Co., Colorado ...	610,000
Leadville Con. Mining Co., Colorado	370,000
Lexington Mining Co., Montana...	565,000
Little Chief Mining Co., Colorado	760,000
Mount Pleasant Mining Co., California... ...	105,000
Morning Star Con. Mining Co, Leadville, Col....	740,000
Navajo Mining Co., Tus-caroora, Nevada ...	225,000
New York Hill Gold Mining Co., California ...	215,000
Northern Belle Milling and Mining Co., Nevada	2,512,500
Ontario Mining Co., Utah	5,675,000
Original Mining Co., Butte, Montana	102,000
Plumas Eureka Gold Mining Co., California ...	1,687,488
Plymouth Con. Mining Co., California	600,000
Richmond Con. Silver Mining Co., Nevada ...	3,974,887
Sierra Buttes Gold Mining Co., California ...	1,360,288
Sierra Grande Mining Co., New Mexico ...	760,000
Silver King Mining Co., Arizona	1,300,000
Standard Con. Mining Co., California	4,450,000
Silver Chord Mining Co., Colorado	225,000
Small Hopes Mining Co., Colorado	325,000
Total dividends from a list of 44 mines only...	$55,984,372

or say upwards of £11,000,000 sterling.

It will be seen by the above list, which represents only a small portion of the gold and silver mines of

America, what a valuable industry mining is, as in addition to the dividends (in coin) paid from the above there may be estimated $100,000,000 as distributed in wages, plant and material, throughout the various mining centres in which the mines are situated.

There is an idea very prevalent that none of the rich dividend-paying gold and silver mines are ever offered in the English market. Such an idea is quite erroneous, as can be shown by the fact that many of the richest American mines were originally offered for sale in London at comparatively low figures, but could not find buyers. The properties have since been purchased and developed, mostly by American enterprize, with remarkable success. A correspondent supplied me with a list of American mining properties that had originally been offered in England and refused, and which have since paid in dividends about $80,000,000, or say £16,000,000, as quoted in a letter in *Mining Journal*, December 23rd, 1882.

There can be little doubt that the future yield of gold and silver in America will soon reach and exceed $100,000,000 annually, and with increased energy and attention to *bonâ-fide* working and development of the mines now opened, and prospecting throughout the mining regions of America, Australia and New Zealand, the future supply of gold can be largely increased.

Here opens fields of enterprize for industrious young men to strike out a path for themselves, to become prospecters and workers in the various phases of legitimate gold and silver mining. To a vast proportion of intelligent young men, possessed of pluck and energy, there offers a profitable and healthy occupation, with prospects of ultimate success that can hardly be expected from other industries.

There is nothing derogatory in the occupation of mining, on the contrary it affords a scope for the display of the highest skill, ingenuity and intelligence in exploring the treasure vaults of Nature's National Bank of Issue. The drafts of labor and capital, judiciously drawn on this bank will be duly honored, nor does it ever close its doors when a run is made upon its coffers. The great monetary institution and depository of wealth in gold and silver (the mines) invites research of its treasures, and gives forth its wealth to those who legitimately and industriously seek it.

There is room for tens and hundreds of thousands of strong, able and industrious men to break into the treasure vaults of the earth, with picks, drills, gads, hammers, and shovels,—and powder or dynamite not objected to. To raise the matrix to the surface and to extract the gold and silver therefrom is a vast field for the skilled mechanic and scientific workers in metallurgy and chemistry that will generally afford ample opportunity for the display of their industry and ability with profit to themselves and advantage to the mining industry.

I cannot but think that many thousands of young men who have no settled or permanent prospects before them would find gold and silver mining in America and Australasia a source of occupation and employment congenial to their tastes, by holding forth hopes of the realization of wealth and independence more quickly than could be acquired by other callings.

It is not to be expected that everyone who enters into and follows gold and silver mining as an occupation, either as an absolute worker or an investor of capital, will be successful to the extent of their wishes, but the industry has developed to such an extent, and proved so profitable in its general results, that its future development with improved appliances, under experienced supervision, can be relied on as one of the most important and profitable industries of the present and future ages.

If the efforts I have taken in bringing the subject of "Our Gold Supply, and its effects on Finance, Trade, Commerce and Industries," before the public are attended with beneficial results, by causing more attention to be given to the industry, and economy and practical experience be directed to the management and development of gold and silver mining generally, which will tend to increase the supply of the precious metals with profitable results, I shall be gratified.

There are many other matters in connection with "Our Gold Supply" that I should have wished, if space and time permitted, to call attention to, but trust that what I have so far done to give information on an important subject may be acceptable and useful to my readers, or those interested in the supply of gold.

There is no reason, so far as regards the resources of the gold and silver mining districts now developed, why, with increased energy and the intelligent direction of capital and labor, the yield of gold and silver should not in a few years be doubled, and thereby increase the general prosperity of the world.

The production of gold and silver in proportion to the increase of population, the requirements of nations, and the extension of finance, trade, commerce and industries, is an absolute necessity, and must, in a great measure, be the barometer to indicate the material progress of that vast section of civilized humanity which comes within the benefits and under the influence of

OUR GOLD SUPPLY.

LONDON:
Printed by Eden Fisher & Co., 50, Lombard Street, E.C.

ERRATA.

PAGE 10.—Line 15, read "*based*" for "basis."
,, 45.— ,, 13, ,, looking "*at*" and, &c.
,, 62.— ,, 9, ,, bullion "*for*" nothing.
,, 73.— ,, 13, ,, "*what*" for "into an."
,, 113.—Last line, read "*supply*" for "supplied."
,, 114.—First line, ,, "*superintend*" for "superintended."
,, 128.—Last line but one, read "*persevering*" for "preserving."
,, 136.—Line 9, read "*miners*" for "mines."
,, 140.—Last line and word, read "*apparent*" for "transparent."
,, 151.—Line 27, read "*supposititious*" for "suppositious."
,, 200.— ,, 16, ,, "*trucks*" for "tons."

485053

EcF
C8186nx

Cornish, Thomas
Our gold supply.

DATE.	NAME OF BORROWER.
Jan 22/55	G. Cundari 1210 Feb 7
	826 Feb 21
	"

University of Toro
Library

DO NOT
REMOVE
THE
CARD
FROM
THIS
POCKET